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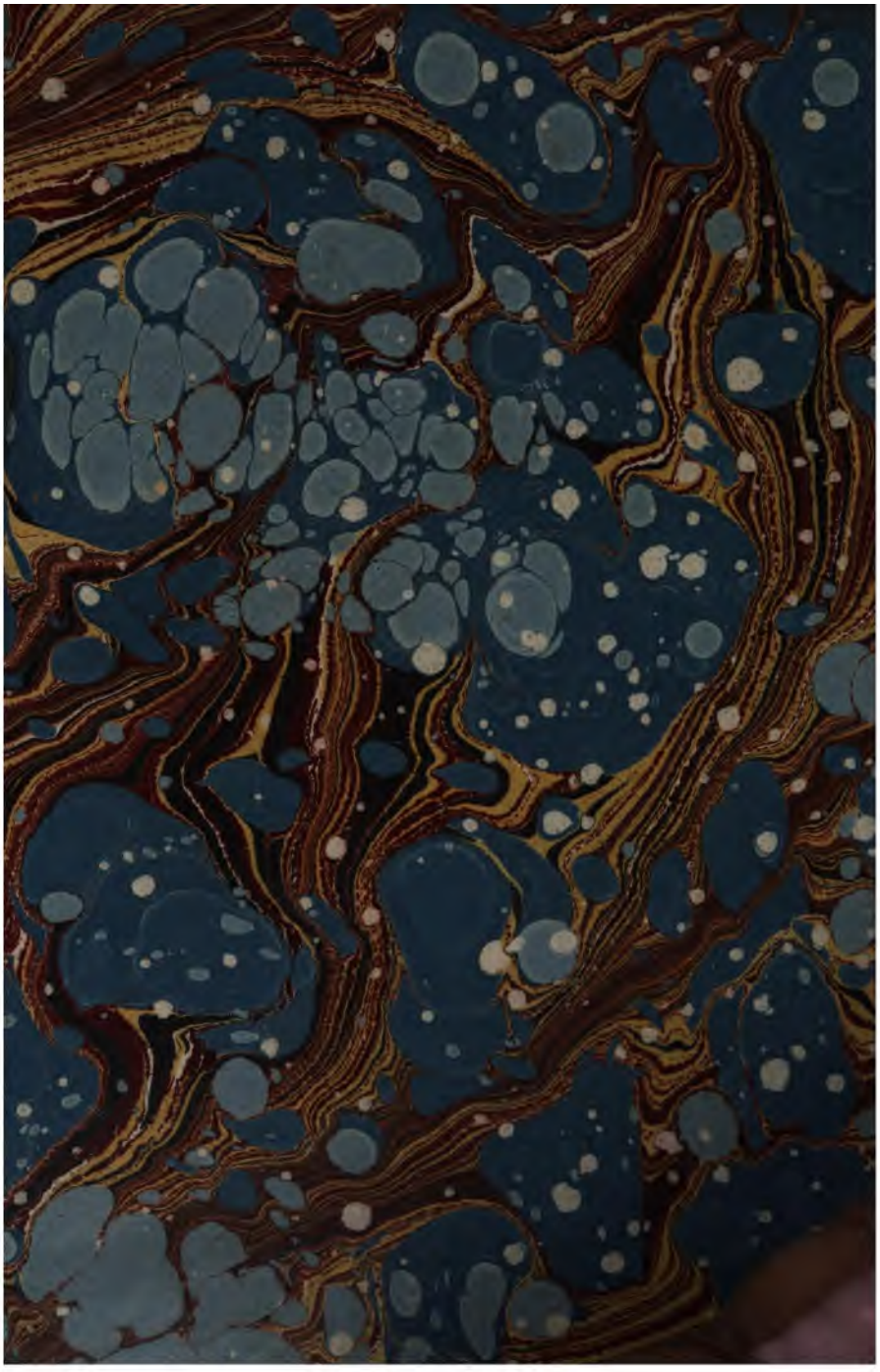

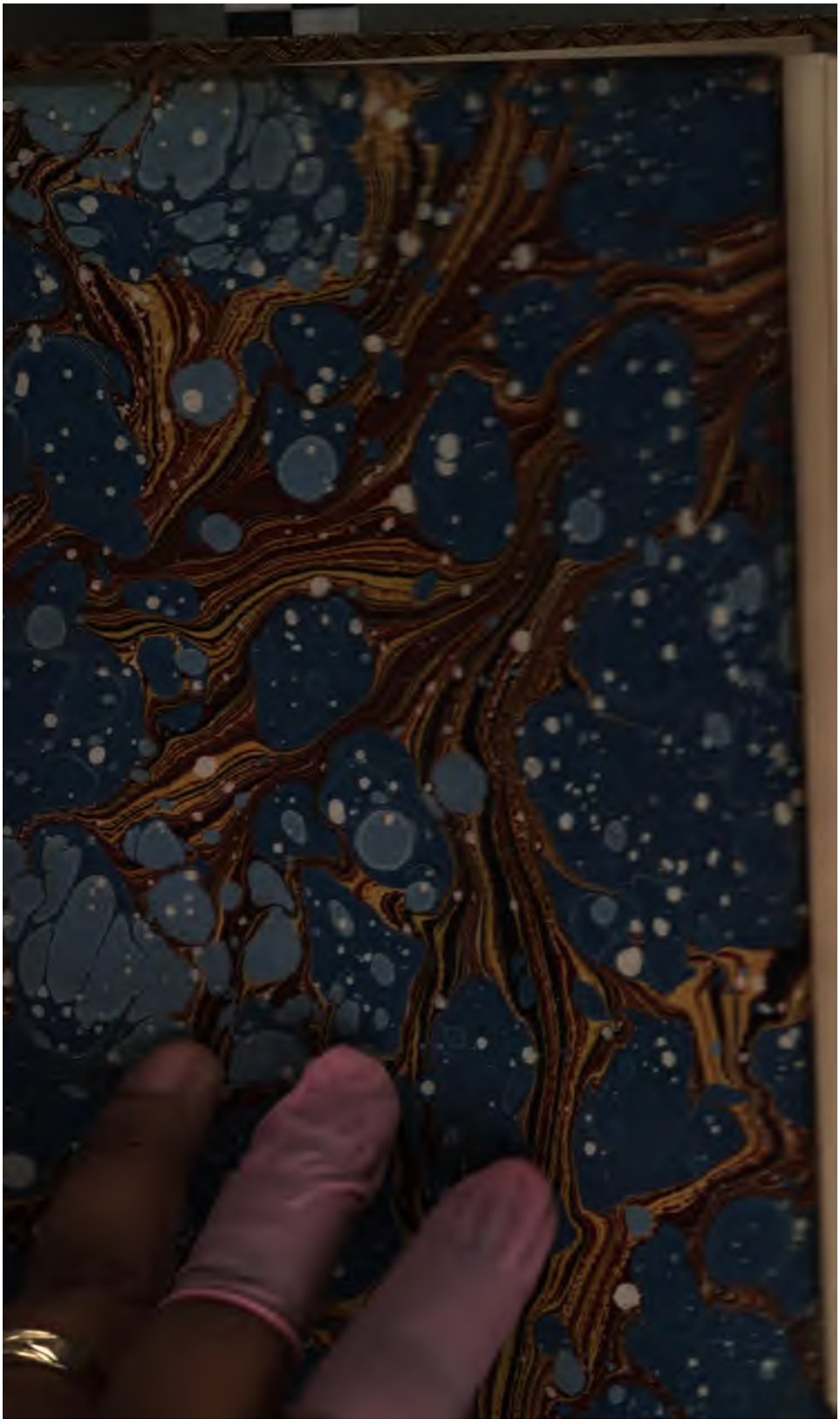

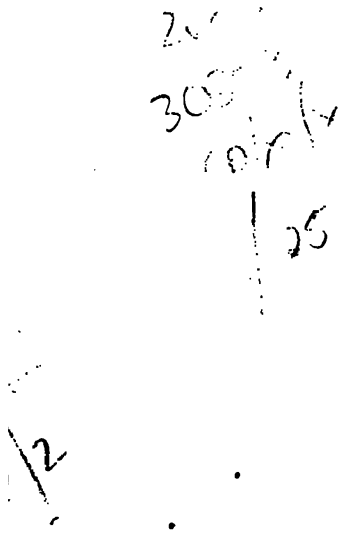

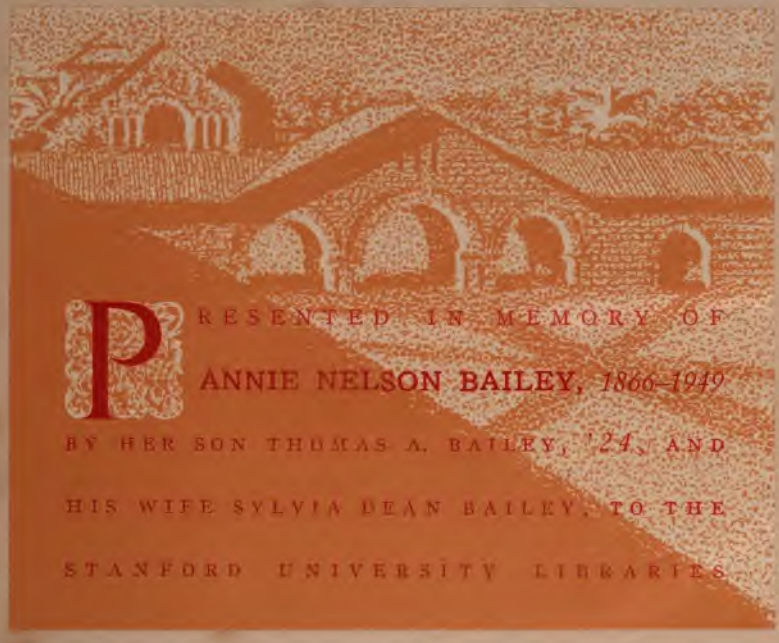

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MEMOIRS

CHIEFLY ILLUSTRATIVE OF

THE HISTORY AND ANTIQUITIES

OF

NORTHUMBERLAND.

VOL. I.

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CHIEFLY ILLUSTRATIVE OF

THE HISTORY AND ANTIQUITIES

OF

NORTHUMBERLAND.

COMMUNICATED TO THE ANNUAL MEETING OF THE

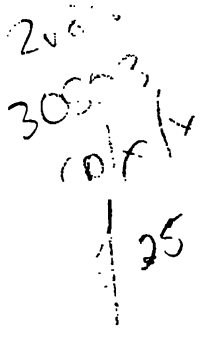
ARCHÆOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND

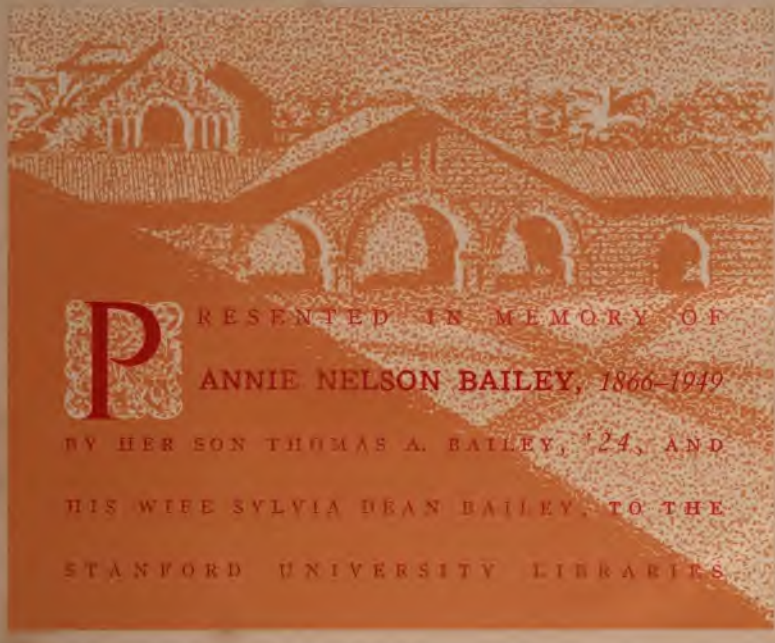
HELD AT NEWCASTLE-ON-TYNE IN AUGUST 1852.

VOL. I.

MISCELLANEOUS PAPERS.

LONDON:
BELL AND DALDY, 186 FLEET STREET.
1858.





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Counties. The selection, although from unavoidable circumstances more limited than might have been anticipated, will be found to comprise the chief contributions of that character, prepared for the Meeting of the Institute. There are, however, certain subjects of local importance brought forward at that time, the omission of which in the present publication would have been a cause of serious regret, were it not that the kindred Society of the Antiquaries of Newcastle has constantly evinced the energies and intelligence through which the more complete elucidation of such matters of local History will be advantageously achieved.

The following pages, however, present to the Archæologist valuable accessions to our knowledge of the earlier History of the Northern Parts of Britain; of the vestiges of Roman occupation; of the period also of the introduction of Christian Faith; and of many matters prior to the Feudal age. With these more recondite archæological subjects there will be found in this Volume researches of peculiar local attraction, not devoid of value even in a practical point of view. The Institute is indebted to Mr. Hodgson Hinde—on whom has now fallen the mantle of the lamented Historian of Northumberland, John Hodgson—for a valuable exposition of the early conditions and trade of Newcastle. The progressive development of the vast industry and enterprise of the Tyne has presented to Mr. Thomas John Taylor a subject of the highest local interest in the Archæology of the Coal Trade, which none could have treated with greater ability and intimate knowledge of all its curious details. Amongst those to whose kindness the Institute is under special obligation, as contributing illustrations accompanying their Memoirs, Mr. Taylor must be specially named. He has liberally defrayed the entire cost both of drawing and engraving the numerous representations of machinery, the sections, maps, and other curious details.

The excavations at High Rochester, it will be remembered, of which a full Report and Ground-plan is here given by Dr. Bruce, were made by the direction of the Duke of Northumberland, and at his expense, shortly previous to the Meeting of the Institute, with the special intention of augmenting the interest of the Proceedings on that occasion, and inviting the attention of Antiquaries,

strangers to the district, to the important character of the Vestiges of Roman dominion in the North of Britain. It were only fitting that the Institute should renew the record of their grateful sense of the considerate liberality of their noble Patron. Nor can acknowledgment here be omitted that the valuable Memoir by Mr. James Yates, on the Roman Barrier-walls of Germany, as compared for the first time in minute detail with that of Northumberland, has been the result of personal survey, and of a special visit of several weeks' duration made by Mr. Yates, in the earlier part of the year in which the meeting took place. That spirited enterprise in the cause of National Archæology may well deserve to be honourably remembered. The Illustrations of Mr. Yates's Memoir, as also those of the Description of Brinkburn Priory, by Mr. Petit, have been presented with most friendly consideration by their respective authors.

As a contribution towards the Geography of Great Britain in the earlier periods, in prosecution of the undertaking so efficiently commenced by Mr. Charles Newton in his "Map of British and Roman Yorkshire," published by the Institute, the Ichnography of the County of Durham, prepared by Mr. Hylton D. Longstaffe, cannot be too highly commended. The talented Historian of North Durham has enriched the volume with a Dissertation on the Architectural History of Durham Cathedral, a masterly outline of a great subject which may rank with his best contributions to Archæological Literature.

ON THE ADVANTAGES DERIVED FROM ARCHÆOLOGICAL INVESTIGATION.

An Address delivered at the Newcastle Meeting of the Archæological Institute, August, 1852.

By DANIEL WILSON, LL.D.,

SECRETARY OF THE SOCIETY OF ANTIQUARIES OF SCOTLAND.

Called as I have unexpectedly been to address the members and friends of the Archæological Institute, on some theme adapted to the inaugural proceedings of its congress, I know of no ground on which we may more confidently appeal to the intelligence and the encouraging sympathy of those among whom we are now for the first time assembled, than by seeking to show some practical utility in the investigations which constitute our common bond of union. The antiquary has rarely appealed to public sympathy for encouragement in his pursuits, or aimed at winning the countenance of more than a favouring few who shared in his enthusiasm and partook of his fond regrets. The time, indeed, is not long gone by when the antiquary, with all his enthusiastic longings, was little better than a subject for popular mirth; and the very highest aim of his pursuits was supposed to be the amassing of some such quaint miscellany as Beckford's Fonthill Abbey or Walpole's Strawberry Hill. That such should have been the common estimate of archæological pursuits was much more the fault of the antiquary than of the public. With some few rare and honourable exceptions, we are compelled to admit that in this country antiquities have, until very recently, been collected almost without an aim; and prized not because of any use pertaining to them as elements of historical or ethnological investigation, but chiefly for their rarity and cost. Our public museums have exhibited equally little

intelligent appreciation of their meaning, in those picturesque groupings which took the place of scientific classification, and showed them as at best but costly toys amassed to please the eye; while our text-books have been obscured by theories based on no sufficient data, and our researches have been cumbered by limitations originating in a too exclusively classical education. The treasuries of the past were ransacked, not to throw light on the obscurities of Britain's infancy, but to illustrate the most familiar features of Rome's maturity, or at best to trace out the footprints of her conquering legions.

Now, however, we are learning to look upon the whole accumulated hoards of the antiquary as but means to an end. Archæology is rising to the dignity of a science, based on pure inductive reasoning, and its students are searching into the past with as ardent yet wisely regulated zeal as that with which the astronomer pierces the visible bounds of space, or the geologist ascends through the periods of a still more remote and infinitely vaster succession of ages.

If geology had taught us nothing else, it has conferred on us an inestimable boon in that new faith in the possibility of recovering the chronicles of the past to which it has given birth—in that well-grounded assurance that no era can be so remote as to tempt the investigator to despair of reluming its long-extinguished lamp: since the geologist has ascended through eras in the history of our globe, compared with which the whole existence of our race is but as the life of the ephemeron, which knows no morrow. But geology has taught us much more; it has shown us how to use the evidence lying around us, and to give voice to those eloquent chronicles of history which have so long remained unheeded and uninterpreted, even by those who accumulated them from the mere instinct of a puerile acquisitiveness. Archæology is, indeed, much more than a borrower from the wisdom and experience of the geologist; it supplies a continuous link—and not the least important one—in that wondrous chain of reasoning by which science has been enabled to trace back being through infinite periods of ages, to discover the hand of God in the creation of life in its lowest forms, and his divine Providence then manifest in the same wondrous

adaptations of means to an end, as still speak to us in the curious mechanism of every living creature. Beginning with the primitive forms of life—the trilobites or cephalopods of the primary fossiliferous strata—the palæontologist ascends through the palæozoic, secondary, and tertiary strata, recognising ever new evidences of creative wisdom and power, until at length, among the alluvium of recent formations, he reaches the first traces of that master-work, which God made in his own image, and breathed into his nostrils the breath of life, and man became a living soul.

No lesson, assuredly, is more clearly taught by geology than this—that "man is but of yesterday." But although the period to which archæological research invites exclusive attention is altogether trifling in its duration, compared with those ages embraced in the investigations of the geologist, its objects are higher, its subjects nobler, than all with which he can deal; and it appeals to that deeper sympathy which finds a response in every breast, familiarly expressed in the trite classic line—

"Homo sum; humani nihil a me alienum puto."

The science of archæology contemplates the history of man, the progressive development of his faculties, the aggregation of the race into families, communities, and nations, the rise of social and political institutions, the birth of arts, the growth of creeds, and all those evidences of an ever-maturing progress by which this conclusion is borne with new force on the mind: that the golden age of man lies in the future and not in the past. To this conviction we assuredly yield our assent; we are not of those who drivel and dote upon that which is old merely because it is so, or believe in the good old times as of a golden age which is for ever beyond recall. Our desire is to study the past, that it may illuminate the present, and teach us a surer faith in the future. We disclaim altogether the wish to stand aside and bear no part in that progress which we discern as the characteristic of former ages no less than of our own, but desire the rather to claim a larger share in all the experience of the past:

"For we are ancients of the earth,
And in the morning of the times."

Led by the newest disclosures of archæological science, we

are learning to look with interest upon man in the infancy and cradle of his race, as well as in the progressive stages of his advancing civilisation, and amid the higher developments of his intellectual power. But there is one country which meets the archæologist on the threshold of his studies, with few if any traces of that infancy which marks the dawn of history in all other lands. No department of antiquities has excited a deeper or more universal interest than that which deals with the records of primeval civilisation on the banks of the Nile, and aims at deciphering those mysterious chronicles which have for ages mocked the curious gaze of the student, and, after the labour and learned ingenuity of centuries, still baffled all the powers that scholarship could bring to bear on its impregnable and virgin fortress. At the close of last century a new aspirant for the laurels of the old Roman Cæsars led the legions of France to that ancient battle-ground of his Roman precursors; and with these Gallic warriors went a nobler legion of *savans*, nominated, in a spirit worthy of modern civilisation, to cope with the mysteries of ages, and to add by their peaceful conquests to the wealth of intellect and the treasures of knowledge for all nations. Yet, after all, it is not perhaps too much to say that the most gallant achievements of the arms of France, and the noblest discoveries of her scientific corps, were alike surpassed in value by the chance discovery of M. Bouchard, an officer of engineers, who, in the year 1799, while engaged in constructing a fort on the western bank of the Nile, discovered that mutilated block of basalt, the Rosetta Stone, which was destined to effect a revolution in one of the most favourite fields of archæological research.

This remarkable tablet pertains to the documentary class of ancient memorials, and as such comes specially within the province of our historical section. Yet I may be permitted here, without undervaluing that important branch of archæological study, to observe, that even in the remarkable field of Egyptian antiquities we have a striking proof of the value of pure inductive archæology, as compared with documentary evidence or written chronicles, when dealing with primitive history. Eighteen years elapsed after the discovery of the trilingual Rosetta inscription, before our illustrious countryman, Dr. Thomas

Young, mastered the key of the riddle, established the alphabetic use of hieroglyphics, and demonstrated the phonetic value of the first of its characters. Yet, after all the labours of Young, Champollion, Rosellini, Bunsen, Lepsius, and other scholars, in the decipherment of the hieroglyphic records of Egypt, we have learned much more regarding the arts, the domestic and social habits, the mythology, faith, customs, and political institutions of that ancient nation, from the pure inductive reasoning of Sir J. Gardner Wilkinson, based solely on the decipherment of its unwritten chronicles, the relics and decorations of its sepulchres, the paintings and sculptures on its temples, and the wondrous architectural monuments which survive to attest the skill of the builders of these vast structures, still so imposing in their ruins.

The history of Etrurian archæology no less strongly illustrates the same truth. Its alphabet is not unknown. The Perusinian monument, and other genuine examples of Etruscan literature, have long been familiar to us; in their mysterious dumbness, not altogether without avail in giving us some partial clue to the ethnological characteristics of the language: shemitic, abounding in consonants: therein strangely contrasting with the tongues which became the native languages of Tuscany—and like the other shemitic languages, written from right to left. But while this is all the use we have been able to make of the documentary evidence within our reach, it may be truly said of ancient Etruria, as of ancient Egypt, that we know more of the internal history of these kingdoms, which had disappeared from the ranks of living nations ere our insular race emerged from the obscurity of its prehistoric night, than we do of our own British and Anglo-Saxon ancestry from the fifth to the tenth century. "The internal history of Etruria," says Mr. Dennis,* "is written on the mighty walls of her cities, and on other architectural monuments: on her roads, her sewers, her tunnels, but above all in her sepulchres. It is to be read on graven rocks, and on the painted walls of tombs. But its chief chronicles are inscribed on sarcophagi and cinerary urns, on vases and goblets, on mirrors and other articles in bronze, and a thousand *et cetera* of personal adornment, and of domestic

* Etruria, vol. i. p. xxiii.

and warlike furniture, all found within the tombs of a people long passed away."

The same contrast holds good in relation to the investigations of our own national history. The most trustworthy of our early chroniclers become nearly valueless when they pass beyond their own experience: Gildas, Nennius, and even the venerable Bede, have to be referred to, with all our critical caution in full play; and for the earlier centuries of our island's history, its written chronicles present to us a mass of childish fables, in which we look in vain even for the crude indices of tradition, or the mythic symbolism of a genuine national epos.

Far different is it, indeed, when we reach the era of authentic charters, though even with them we are still required to exercise a wise scepticism, lest we should accept the spurious forgery for the genuine document. But it is just because these invaluable heirlooms of the past are used by the archæologist, in the very same spirit of wise and cautious induction as those older unwritten records pertaining to the Institute's section of antiquities that they become so valuable a mine for the historian. The charters, deeds, wills, grants of land, of privileges or immunities, the royal, monastic, and baronial accounts of expenditure, and the like documents—of the same era, and it may be, even penned by the same hand, as the worthless fables of medieval chroniclers—themselves once so valueless to all save the individuals whom they personally concerned, are now for us, like the paintings, sculptures, and antiquities of Egypt, Assyria, or Etruria, disclosing a thousand traits of manners, customs, social habits, and that progressive civilisation, the brighter maturity of which it is our privilege to inherit. There is, indeed, that element of possible error in all documentary evidence, dependent on the question of authenticity, which warns us that even "charter proof" must be received with salutary caution, and that the antiquary, whose labours belong exclusively to the historical section, has a preliminary class of doubts and difficulties to contend with, fully equal to any that encumber the path of the primitive archæologist. The researches of the latter are carried out among more ancient chronicles, but written in that intelligible ideography which pertains to old sepulchral rites, to relics of metallurgic and

fictile arts, to weapons, implements, and personal ornaments, and even to osteological remains: the human skeleton, the bos primigenius, and bos longifrons, the horse, the dog, and all the products of the chase, of our pagan ancestors; and to gigantic cetacean remains, such as those disclosed amid the alluvial strata of the valley of the Forth, which—associated as they were with unmistakable evidences of a contemporary human population—carry back our thoughts to the first colonisation of our island, at a period not greatly less remote than the dawn of history in the valley of the Nile.

It would ill become me, in addressing a congress of British archæologists, to disparage the investigations of those laborious students of antiquity, to whom we owe the invaluable contributions to definite and authentic history, recovered from national, ecclesiastical, or municipal archives, or from the old family charter-chests which have descended to the inheritors of ancestral honours and possessions. And no less would it be ill-timed and unworthy of one professing any veneration for the memorials of the past, while standing within the time-honoured circumvallations of the Pons Ælii, and surrounded by those who have so gracefully distinguished themselves by their intelligent researches amid the abundant footprints of the old Roman, with which this district abounds, were I to seem to slight the unwearied researches of the Anglo-Roman antiquary. But such unworthy misapprehensions I altogether disclaim.

It can excite surprise in no unprejudiced mind that Anglo-Roman antiquities should have commanded so large a share of the attention of English antiquaries as they have done, for in the study of these we may be said to investigate four centuries of our country's history, the dawn of its later civilisation, and the germ of many of its most durable institutions, as well as of the arts from whence the gorgeous architecture and sculptures of our medieval centuries trace their birth. No branch of antiquarian study is valueless when employed as a means to higher ends; much less can this important section of our archæological chronicles be undervalued by any one who looks to such elements of unwritten history for the reproduction of our national annals. We do, indeed, I cannot but think, too frequently see energies misspent in the endless describing, engraving, and publishing of every mutilated relic of a tesselated pavement, or

even of every broken fragment of samian bowl, amphora, mortarium, or the like *disjecta membra* of domestic pottery dug up on well-established Roman sites, and therefore pregnant with no single iota of new truth for us. I cannot help thinking such to be worse than labour thrown away; and however unpopular the sentiment may be with some, I hope we shall soon see such misplaced expenditure of time and money directed into channels more profitable to us than in this endless trimming of

"Obsolete lamps, whose light no time recalls."

I feel myself free to give expression to such sentiments here; for if we may not denounce the puerilities and dilletantism which have helped to bring our favourite studies into discredit, such congresses must be as profitless as the effete systems which they have superseded. But I am under no apprehension of being misunderstood by you in these remarks. No feature will, I believe, be found more universally characteristic of a cultivated intellect and a largely endowed mind than the possession of wide sympathies, and the capacity for appreciating and enjoying the labours of kindred intellects, expatiating over the widest ranges of thought and the loftiest aspirations of genius; and if such be a true gauge of the highly cultivated mind, the sympathy of every intelligent archæologist may justly be looked for in all branches of research, however remote from the chosen field in which their own favourite avocations are pursued.

This enlarged sympathy in the varied pursuits of our common study I conceive to be one of the great ends which these annual congresses are calculated to effect. I protest only against the *exclusive* study of Roman antiquities as I do against the exclusive exaltation of any single branch of archæological research to the neglect of others; and still more strongly do I protest against that narrow spirit, not altogether unknown within the arena of archæological investigation, which would array the black-letter student against the Roman antiquary, the investigator of primeval antiquities against both, the ecclesiologist against these, and the philologer against all, until we realise for ourselves that ancient curse, that "a man's foes shall be those of his own house," and our peaceful and engaging

studies supply the slogans for a warfare more miserable than the petty feuds which for centuries made Northumberland and the fords of the Tyne the battle-ground of rude border clans. Long may our Institute be preserved from such mean strife, which could only tend to drive the real students of antiquity beyond its precincts.

By such a union of investigators into the history of the past, as this spirit of sympathy and intelligent co-operation is calculated to effect, we may hope for the largest results. Much as we value the abundant relics of the arts and civilisation of the Anglo-Roman period, we will not devote ourselves to their exclusive study, because many of us begin to think that the world was not created altogether in that memorable year when Julius Cæsar first landed on our shores, nor are we even prepared to trace to that event the earliest dawn of British civilisation. It is impossible to look to the valuable exports of Roman Britain, almost immediately after its occupation by the imperial legions, and still to hold to the opinion that they found it the mere haunt of scattered tribes of naked savages. The evidence of a native coinage, already in existence, prior to that event, is in itself no slight proof of advancement in civilisation; and when it is still further seen that the earlier types include rude imitations of the gold stater of Philip of Macedon, or the tetradrachm of Alexander the Great (whatever allowances we make for the probability of their being only second-hand copies), we are led to assume the existence of that civilisation at a still earlier date, and to anticipate further discoveries, proving at least some indirect intercourse with the ancient kingdoms of southern Europe, apart from the older Gaulish invasion of Greece; such as the hoards of cufic coins found in the north prove to have been carried on at a later date, but with no greater facilities, between the ancient Scandinavian countries of the north and the Mohammedan kingdoms of Asia. The whole evidence which this primitive coinage supplies is entirely consistent with such other indications as we possess. It proves, by the use of a metallic currency, the existence of a civilisation far in advance of the popular idea of the barbarian Briton of such a period; and yet at the same time it shows, by the rude imitation of a foreign coinage, how partial and and imperfect were the ideas then acquired of the nature of

a national currency as the medium of commercial intercourse and the standard of exchange.

One other link of evidence I conceive we possess, also pointing to that older if still partial and indirect intercourse between the barbarian north and the civilised south of classic Europe, in the bronze leaf-shaped sword—that most beautiful of all the relics of the old era to which the name of the Bronze Period has been given. Its occurrence on the earlier archaic Greek vases is I think indisputable: it may be observed on several in the British Museum, while in later examples the addition of the guard marks the transition from this beautiful primitive form to the straight sword, figured on the vases characterised by the art of Greece's later and more perfect civilisation.

These are mere indices of the line of evidence wherewith we seek to lay hold on the past, and by ever-new efforts to ascend higher and higher, until the researches of the archæologist shall take hold of the latest disclosures of geology, and restore the broken links in that chain of truth by which the present is bound as by the ties of filial relationship to all the past. I cannot, however, let this opportunity pass without guarding against one source of error and false criticism pregnant with much evil. Acknowledging, as we all most heartily do, our obligations to the Scandinavian antiquaries for the elements of an intelligent system of archæological chronology, I am well assured that none will be more ready than they to condemn the practice now in vogue here, of testing and converting the valuable guides to "Northern Archæology" into blind leaders in a country, to any mastery of the antiquities of which they lay no claim. It is one of the most essential points of difference between geology and archæology that the eras of the latter, though synonymous, are not necessarily synchronous. The Bronze age of Mexico was still undisturbed by all later elements in the 15th century, while the close of that of Britain preceded the first century of our era; and the blunt and heavy iron sword of the Gaul and Briton, described by Tacitus, differed as widely as it was well possible for it to do from the light but graceful bronze weapon of an earlier age. If Worsaae* be correct in assuming that "the Da-

* Worsaae's "Primeval Antiquities of Denmark," translated by W. J. Thomas, F.S.A., p. 46; vide also, Ibid. p. 142.

nish Bronze period was in all probability supplanted at a comparatively modern date," and that "at all events the close of Paganism is clearly reflected in its iron period;" then, assuredly, the critics who insist on bringing all our speculations to the test of "Northern Archæology" ought also to assume that St. Alban and St. Ninian were contemporaries of St. Olaf, and that the Paganism and primitive Christianity of both countries are alike contemporaneous.

There are indeed those among us, I am well aware, who ridicule all attempts to peer into that dim and remote era of our island's and our race's story which lies beyond the epoch of the Roman invasion, and who smile at the believers in the existence of such Stone and Bronze periods for Britain as we know to have existed for Polynesia and Mexico. We are well content to be regarded by such as fond and credulous enthusiasts. For them assuredly, beginning their researches as they do amid the fully developed Iron age of Roman Britain, a Stone or Bronze period is as meaningless as a carboniferous or cretaceous system to the geologist who still persists in tracing all terrestrial phenomona to the Noahic Deluge. Perhaps it may yet be found that the spirit in which the systematic classification of archæological periods has been pronounced to be a mere crude and specious fancy is just about as profoundly sagacious as the orthodox creed of those Mosaic geologists, who denounce the intelligent deductions of science as rash scepticism or impious profanity.

But, whatever be the value ultimately found to attach to this attempt at reducing archæology to a scientific system, the methodic research and accurate observation which it encourages cannot fail to be of service; and its beneficial influence is already apparent in the increasing manifestation of that spirit, which recognises in the collections of the antiquary only the means to an end, the mere alphabet of our studies: as profitless to us, till they are interpreted, as were the hieroglyphics of Egypt before their key had been mastered by Young and Champollion. Meanwhile the Institute invites the co-operation of every class of antiquaries. By its several sections it aims at presenting facilities to all, and encouraging each to contribute some materials towards rearing that grand historical fabric which must be the true end of all such researches. The student

of primitive antiquities and of philology may do somewhat towards illuminating that remote and obscure past to which I have referred. The Roman antiquary assures us of ample materials for the history of four of the most important centuries of our island's story. The Anglo-Saxon student is painfully exploring that far darker and more obscure era which follows from the sixth to the tenth century, but of which, though so near our own times, we know as yet far less than of the history of Egypt three thousand years ago. Here, as in the previous period, the labours of the numismatist are invaluable, and have been rewarded by important results, pregnant with still larger promise for the future. I would only throw out one suggestion for the consideration of the investigators of this important field of native archæology: whether we have not heretofore too hastily accepted the convenient name of Anglo-Saxon as a definition for many relics immediately succeeding the Anglo-Roman period, but which are much more likely, I conceive, to be found to pertain to the native Romanised Britons? Such at least is the inference which I should be inclined to draw from affinities like those traceable, for example, between some so-called Anglo-Saxon cruciform fibulæ and many of the bow-shaped fibulæ found on Roman sites; nor are the analogies observable in some of the pottery less worthy of further study. The characteristics of the Pagan Saxons are not such as would indicate much intercourse or familiarity with the arts of classic Rome. Both their geographical position and their mythology point much more distinctly to an affinity with the creed and customs of Pagan Scandinavia.

That age of darkness past, we have a gallant phalanx of labourers for the one which follows. Architecture, sculpture, heraldry, inscriptions, and documentary evidence of every sort, all invite and abundantly reward research, while they supply attractions calculated to tempt the most varied tastes. Art assumes to itself numerous pleasing forms. Numismatics again presents a wide and attractive field. Seals, matrices, illuminations, tapestries, and paintings, each contribute their share, and nothing seems wanting but some such element of union as the Archæological Societies and their congresses supply, to bind those varied elements of isolated truths into a whole, and reproduce the living history of the past.

We shall have gained much if we obtain, as the result of such reunions as this, that spirit of enlarged and liberal sympathy, not always present, I fear, among the students of antiquity, which shall teach us a reverence for the enthusiastic investigators of every department of archæology, however dissimilar such may be to our own favourite pursuits. And still greater will our gain be, if in establishing such pursuits on their just basis, as a science which involves in its results the abstrusest and most important problems of history, we give the death-blow to that petty spirit of dilletantism which has too often made the antiquary the laughing-stock of the real searcher after truth.

I indulge in the hope that, along with such evidence of progress, we shall also cultivate a more intimate alliance with the kindred sciences. Geology touches on the legitimate sphere of our investigations, and occupies a common ground, where the researches of the palæontologist come within the recent strata, and in the ossiferous caverns or amid the later alluvial deposits, finds traces of the extinct mammalia which immediately preceded or were contemporary with the aborigines of our race. Ethnology is still more closely allied to archæology, and while it contributes valuable aid to our investigations, it has a larger return to look for from the scientific explorations of sepulchral deposits, and the discriminating interpretation of all the varied traces of ancient arts, manners, and dawning civilisation. Philology is so distinctly recognised already by the ethnologist, that when the value of his labours obtains full appreciation, that of the philologer cannot be overlooked; and the direction which one department of archæological investigation has received of late years, by the researches among the monuments of ancient Egypt and Assyria, promises that the importance of philological investigation is not now likely to be overlooked; but that we may hope to see it brought to bear with renewed power on the remains of our Celtic and Anglo-Saxon literature, and on the few but invaluable monuments pertaining to the native British, Anglo-Saxon, and Scandinavian periods of our history.

It is impossible to overlook the fact, however we may account for it, that a wondrous change has taken place in the appreciation of the study of antiquities. It is no longer confined to a few enthusiastic investigators, but numbers

its devotees by thousands. On every side we see new societies forming, and congresses and large public assemblies convened under the most distinguished patronage, and countenanced by learning, rank, and beauty. We live indeed in an era of change. We may truly say, with all reverence, in the language of holy writ, "Old things are passing away, all things are becoming new." Our steamships, our railways, our electric telegraphs and cheap postage, our vast colonial systems and emigration schemes, and all the most favoured social and political principles of our time, tell of elements of progress busily at work. Yet, even in these we may discern the sources of this revival of so energetic a spirit of archæological research. The ancient Briton and the Gael are fleeing at length from the mountain fastnesses of the west, where they have sheltered themselves on the shores of the Atlantic for two thousand years. Their ancient tongues, which have resisted the successive invasions of Roman, Saxon, Dane, and Norman, cannot long withstand the peaceful invasion of the iron highway and the steam-ship. What the Roman military roads did for England in the first centuries of our era, the British railways and steam-ships are doing for the Celtic Highlands of Wales, Scotland, and Ireland now. Their ancient fastnesses fall at the sound of this modern invader's approach, like the walls of Jericho at the blast of the trumpets and the shouts of the people entering on their promised inheritance. Individuality, ethnological characteristics, and those provincial peculiarities wherein we recognise so many traces of ancient customs and the traditionary memorials of primitive ages, are all disappearing, under the influence of changes which have put an end to that isolation which formed the grand element of their preservation. Assuredly the hold of many centuries is at length giving way. The very material monuments of the past are threatened with annihilation under the iron heel of the Young Giant, whose march is thus over the grave of the past; and it is now, if ever, that we must snatch from oblivion the scattered fragments of these old chronicles, and hand onwards to other ages some memory of that which has been.

ON THE STATE OF NEWCASTLE AND GATESHEAD DURING THE SAXON PERIOD AD-MURUM, WALLKNOWLE, PANDON: MUNECACEASTRE OR MONKCHESTER: AD-CAPRÆ-CAPUT, GOAT'S-HEAD OR GATESHEAD.

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The position and ancient state of the Roman fortress which stood within the area of the present town of Newcastle-upon-Tyne have ever been favourite subjects of investigation with our local antiquarians, from Horsley downwards; and every discovery, calculated to throw light upon them, has been faithfully recorded in recent times in the pages of Hodgson and Bruce, and still more minutely in a paper by Mr. Richardson, in the Archæologia Æliana.

The Saxon History of the town has been comparatively neglected, although materials are not altogether wanting for its elucidation.

The following particulars were originally compiled in somewhat fuller detail, as a contribution to a comprehensive History of Newcastle on which Mr. Richardson has been for some time engaged.

At the suggestion of the local committee appointed to make arrangements for the meeting of the Archæological Institute, and with the ready concurrence of Mr. Richardson, they have been revised, and are now submitted in a compressed form to the Historical Section of the Institute.

It is necessary to explain to those who are unacquainted with the locality, that within the walls of Newcastle are united two towns or villes, which were distinct from each other until the 27th of Edward I., when the ville of Pandon was by royal charter annexed to Newcastle, and incorpo-

rated in the same municipality. Pandon lies a little to the east of the bridge across the Tyne, which gave name to the Roman station of Pons-Ælii, in a small valley, which still retains its ancient name, although the buildings of the modern town have not only filled up the interval which separated it from Newcastle, but have extended widely into the country to the north and east.

The popular belief of the extreme antiquity of this place is shown by a proverbial expression, "as old as Pandon," quoted by Grey, who wrote his "Chorographia" in 1649. The same writer tells us that "after the departure of the Romans, the kings of Northumberland kept their residence here, and had their house, now called Pandon Hall. It was a safe bulwark, having the Picts' Wall on the north side and the river Tyne on the south." Bourne, who compiled his History of Newcastle about 1730, informs us that in his time Pandon Hall "was rebuilt in some measure. There are still remaining many ancient walls, and parts of the building. It was built in the times of the Heptarchy."

Let us compare this traditionary evidence, reported by intelligent parties, who had no purpose to serve, or theory to support, with the account given by the venerable Beda of a seat of the Saxon kings of Northumberland in this district.

Speaking of the baptism of Pæda, Prince of the Middle Angles, son of Penda King of Mercia, previous to his marriage with Elfleda, the daughter of Oswy King of Northumberland, he says, "He was baptised by Bishop Finan, with all his comrades, and soldiers, and servants that came along with him, at a celebrated village belonging to the king, called Ad-Murum. Having received four priests, who, for their learning and good life, were deemed proper to instruct and baptise his people, he returned home with much joy. These priests were Cedd and Adda, and Betti and Diuma, the last of whom was by nation a Scot, the others English. Adda was brother to Utta, a renowned priest, whom we have mentioned before, abbot of the monastery of Goatshead (Ad Capræ Caput)."

Again, in reference to Sigebert, King of the East Saxons, another convert of King Oswy, he tells us, "He was baptised by Bishop Finan in the king's villa above mentioned,

which is called Ad-Murum, because it is close by the wall with which the Romans divided the island of Britain, at the distance of twelve miles from the Eastern Sea."

Camden, without due consideration, has fixed Ad-Murum at Walton or Welton, and Dr. Smith, the editor of Beda, at Walbottle, on the ground of the occurrence of the syllable "wall" in these names, and of both of them lying near the line of the great Roman barrier. There are, however, upwards of twenty other places which equally combine these two qualifications, and several which are much nearer the situation indicated by Beda, "twelve miles from the Eastern Sea." Wallsend and Benwall have each had their advocates; but the former is much too near the sea, the latter too distant, and neither of their claims is supported either by tradition or remains.

The twelfth mile by the course of the Tyne (which must have been the route most familiar to Beda, a resident at Jarrow, on the south of the river) terminates at Newcastle Quay, within the ancient precincts of Pandon. Here Brand has demonstrated the site of the villa of King Oswy, supporting his conclusion, not only by coincidence of distance, but by the evidence of the ancient palace recently in existence, and by the testimony of tradition. One circumstance he has omitted to notice, that a portion of Pandon, on a rising ground immediately above the old Hall, still retains the name of *Wall-knowle*, a designation whose affinity to *Ad-Murum* is at least as distinct as of any of those previously suggested.

Pandon is written in the earliest records *Pampedene*. The last syllable is obviously derived from its situation in a "Dene;" that is, a ravine with a brook flowing through it. "No one," says Brand, "has hazarded a probable etymon of the first syllable." There seems, however, to be good ground for attributing it to the very transaction which has been related in the words of Beda. It is remarkable, that in a very ancient genealogy of the Mercian kings, appended to Nennius' History of the Britons, the name of the son of Penda is written, not Pæda but Pantha, and Panthadene would hardly be distinguishable in pronunciation from Pampadene, which is probably merely a corruption of the former. It is surely no improbable hypothesis that so important an event as the baptism of a heathen prince, heir

to an adjoining kingdom, leading to the ultimate conversion of a whole people, should give name to the Dene in which the immersion took place, whilst the eminence behind has preserved the original title of the villa Ad-Murum in its English equivalent, Wall-knowle.

The conversion of Pæda and of Sigebert took place about A.D. 654, and at no period either before or since have we any notice of Ad-Murum, except on the apochryphal authority of Richard of Cirencester, who places a Roman station of that name on the line of the northern Watling-street, a few miles west of the site assigned by Camden to the Saxon villa. In estimating the condition of Pandon, we must be careful not to attach an exaggerated magnificence to the title of a royal villa. We must remember that the Northumbrian kings had many other residences, and that the resources of the state would not admit of a very lavish expenditure upon each. Besides the capitals of the two provinces of Bernicia and Deira, at Bamboro' and York, Beda casually mentions four other royal villas in addition to Ad-Murum, and there were probably more. We find the sovereign residing at one time at Milfield, which had recently been substituted for the more defensible, but less productive and less sheltered locality of Yeavering, at another at Catterick on the Swale, sometimes at Campodonum, and sometimes on the banks of the Derwent which discharges itself into the Humber.

At a period when coined money, if not altogether unknown, had at all events a very limited currency; and when the royal revenue was derived partly from demesne lands, and partly from a tribute of cattle, (the memory of which was preserved to succeeding ages by the term Noutgeld applied to the land-tax of the northern counties,) it may readily be imagined that convenience, or rather necessity, would suggest the expedient of a migratory court, spending a portion of the year on each of the principal estates of the crown, and consuming on the spot the supplies of the circumjacent district. The fertility of the valley of the Tyne, and the abundant supply of salmon which was furnished by its waters, were no doubt inducements to the prolonged residence of a court, as they were at a somewhat later period to the settlement of monastic establishments. Ad-Murum is distinguished by Beda by the

epithet of "illustris," but it may be doubted whether this does not rather refer to the memorable and auspicious events of which it is described as the theatre, than to any features of splendour peculiar to itself. In one respect Beda's notice of Ad-Murum differs from his mention of the other royal residences. To the latter he applies the term "villa" only, in a sense identical with the modern signification of the word. The former he describes not only as "villa," but as "vicus," which implies a village with a settled population. Probably the "vicus" of Pandon was as populous and prosperous, or even more so, under the protection of King Oswy, as at the period of its union with Newcastle, when it is described by the chroniclers as "a little fisher town."

Newcastle itself was known, until a period posterior to the Norman Conquest, by the name of Monkchester; the latter part of the word affording conclusive evidence that it was built on a Roman foundation.

As all our information respecting Ad-Murum is derived from Beda, so is Simeon of Durham the original source of all we know respecting Monkchester. In his History of the Church of Durham, speaking of the reign of William the Conqueror and the episcopate of Walcher, he says, "At this time there dwelt in the province of Mercia a certain priest called Aldwine, a monk in habit and in deed, and Prior of the Monastery of Winchcombe, who preferred a voluntary poverty and contempt of the world to all secular honours and riches. He had learned, from the History of the Angles, that the province of Northumberland was formerly stored with choirs of monks and hosts of holy men, who living in the flesh, but not after the flesh, rejoiced to follow a heavenly course upon earth. Although he knew that the monasteries themselves were desolate, he longed to visit their sites, and there to lead a life of poverty in imitation of their former inmates. Proceeding then to Evesham, he explained his desire to some of the brethren, two of whom he induced to join in the project; the one Elfwy, a deacon and afterwards a priest, the other an illiterate man, by name Reinfrid. To these their abbot only gave permission to go on condition that they placed themselves under the government of Aldwine, to whom he commended the care of their souls. Thus went forth these three monks on foot, taking

with them only an ass, to carry the books and vestments requisite for the performance of divine service. At first they took up their abode at a place called Munecaceastre (that is, the City of the Monks), on the north bank of the Tyne, which, although it is within the see of Durham, is under the government of the Earl of Northumberland. Wherefore the venerable Bishop Walcher sent to invite them to settle themselves rather under the authority of the church than under lay government. When they went to him he received them joyfully and with great honour, and gave to them the monastery of the holy Apostle Paul, which had formerly been erected at Jarrow by Benedict the abbot, the walls of which, still standing without any roof, scarcely retained a vestige of their former magnificence."

In this narrative a very false idea is given of the character and importance of Munecaceastre or Monkchester, which should be rendered "Castrum Monachorum," not "Civitas." "Chester" is applied indifferently to all Roman camps and stations, without reference to their modern condition—whether a capital has sprung up around them, or their precincts are altogether desolate.

Monkchester, it will be observed, is not here identified with Newcastle, rather than with any other Roman station on the northern bank of the Tyne. Neither is there anything to lead us to suppose that this name of Monkchester was of earlier date than the visit of the Gloucestershire monks, in commemoration of which we might conclude it had been so called. Further, there is no indication that the pilgrims sought this particular spot. On the contrary, they are described as searching for those ancient abodes of piety which are mentioned in the "History of the Angles." By this title Simeon designates the ecclesiastical history of Beda, in which there is certainly no mention of Monkchester; and the temporary sojourn of Aldwine in this place would appear to have been casual. There is, however, another work of Simeon, "De Gestis Regum Anglorum," in which is an account of the same transaction, which is inconsistent with this view. The narrative is shortly as follows:—"Three Mercian monks, truly poor in spirit, arrived at York on a divine mission into Northumberland, seeking from Hugh, the son of Baldric, who at that time held the office of sheriff, a guide to a place called Muneke-

ceaster, which is now called Newcastle. Whither being conducted they remained for a time; but when they found no vestiges of any antient congregation of the servants of Christ, they betook themselves to Jarrow."

Here we have Monkchester authoritatively identified with Newcastle; and, further, we find that the former name was already known, and was not conferred in consequence of this visit. The monks especially wished to be conducted to this place, and expected there to have found some tokens of its former occupation by a religious community The only way of reconciling these two accounts of the same author, is by assuming that Aldwine, when he commenced his journey, knew only of the monasteries of Northumberland which are mentioned by Beda; but that he heard, on his route from Evesham to York, of a place whose name of Monkchester held out a promise that he might still find some traces of monastic occupation.

The last-quoted narrative of Simeon has been copied *verbatim* by Hovedon, Brompton, and other historians; but no mention whatever is to be found of Monkchester by any independent authority, if we except the Life of St. Oswine, published by the Surtees Society, where it merely occurs as the former name of Newcastle, which is described as a place of little importance or population in the reign of William the Conqueror and the early part of that of William Rufus. And yet we are assured by Warburton, as cited by Brand, that "Monkchester was, during the Heptarchy, the chief seat of the kings of Northumberland, who adorned it with a great number of monasteries;" and Brand himself does not hesitate to assert, "We are certain, from the clearest testimony of historians, that monks in more than ordinary numbers resided at it." Now the sole "testimony of historians" on this point is the signification of the name as paraphrased by Simeon and copied by Brompton and Hovedon.

That it existed as a city of monks in Beda's time is utterly irreconcileable with his silence respecting it. Still less can we believe that, amidst the ruin and desolation which overwhelmed all the ancient monasteries of Northumberland in the succeeding age, new foundations sprung up, in number and splendour sufficient to deserve the appellation of a city. The true origin of the name seems to have

suggested itself to Sir Robert Shaftoe, a distinguished antiquarian of the seventeenth century, who held the office of Recorder of Newcastle, and whose opinion is cursorily noticed by Brand—that the name was derived, not from the existence of any permanent monastic institution here, but from the ancient Roman Castrum or Chester being adopted as a place of occasional refuge by the monks of the neighbouring establishments. Some may have lingered here after the final destruction of their homes, and their memory may have survived to the days of Aldwine, as the last of their order in Northumberland.

The suggestion hazarded by Brand, that Monkchester was, after the subversion of the monarchy, the residence of the Northumbrian earls, is altogether unsupported. We are told, indeed, that it was under the jurisdiction of the earl and not of the bishop; but this is equally true as regards any other locality to the north of the Tyne. From the account given by Florence of Worcester and others of the erection of the New Castle on the Tyne, so far from collecting that any official residence existed there, we are not even assured that there were any buildings at all, beyond the remains of the *old* Chester, in contradistinction to which the Norman fortress received its name.

As regards the Saxon period, therefore, after the withdrawal of the Roman garrison from Pons Ælii, the popular opinion of the superior antiquity of Pandon to that of Monkchester or Newcastle seems to be well founded; nor is there any reason to doubt the continued occupation of the "vicus" at the former place, from a period probably considerably earlier than the reign of Oswy, till the time when its independent existence was merged in the municipality of Newcastle.

The latter, on the other hand, boasts its original foundation by Roman hands, but was subsequently unoccupied, or at least undistinguished, until after the time of Beda; and it may fairly be doubted whether it possessed a stationary population until the erection of the fortress from which it derives its modern name.

Viewing both villes as component parts of a united community, we have reasonable grounds for assigning to them a continuous existence from the reign of Hadrian to the present day.

The only notice of Gateshead during the Anglo-Saxon period occurs in a passage already quoted from Beda, in reference to the baptism of Pæda, in which mention is made of "Utta, an illustrious priest and abbot of a monastery, which is called Ad Capræ Caput, or Goatshead." Mr. Surtees, in his History of Durham, speaks doubtingly of the identity of "Ad Capræ Caput" with Gateshead; but the testimony of Simeon of Durham on this point is conclusive. Describing the murder of Bishop Walcher, which undoubtedly took place at Gateshead, he speaks of it as occurring at a place which is called Ad Caput Capræ.

Beda is notoriously an indifferent etymologist, and his derivation of Gateshead is not an exceptional case. It is quite clear that Gate's-Head, and not Goat's-Head, is the correct reading of the name—signifying, as it obviously does, a place standing at the head of the gate; that is, the commencement of the road leading from the Tyne southward. Gate is still commonly used in this sense in the vernacular vocabulary of the North of England.

This casual notice merely informs us of the existence of a monastery here, A.D. 654, but affords no clue either to the period of its foundation or the particulars of its fate. Christianity was introduced into Northumberland in the reign of Edwine, A.D. 627; but, on that king's death, was discouraged and nearly extirpated by his Pagan successors. On the accession of Oswald, in 634, he sought the aid of missionaries from Iona to instruct his people, and three Scottish bishops presided in succession over the Northumbrian church for a period of thirty years. Of these, the second was Finan, who administered the rite of baptism to Pæda and Sigebert. His successor, Colman, being worsted in a controversy with the followers of the Roman church, retired with the clergy of his own communion into Scotland. It seems probable, therefore, that the monastery of Gateshead was founded either in the episcopate of Finan or his predecessor Aidan, and was abandoned when Colman and his followers left Northumberland. We can hardly doubt that, if it had been in existence when Beda wrote, or even at the period of the foundation of Jarrow in its immediate vicinity, we must have found further particulars respecting it in the ecclesiastical history.

A chapel (ecclesiola) existed in Gateshead in 1080, and

was the scene of Walcher's murder. This chapel probably marked the site of the abandoned monastery, and may have been maintained from the days of Finan and Colman.

There is nothing in Simeon's narrative to lead to the conclusion that Gateshead was at this time a place of any considerable population. He does not describe it either as a town or village, but uses the word "locus." The multitude who laid violent hands on the bishop came from the north of the Tyne, and it is not impossible that the ordinary congregation of the chapel may have consisted of the inhabitants of Pandon or Monkchester—the nearest churches of the existence of which we have any evidence on the Northumberland side being Tynemouth on the east and Newburn on the west; the latter, like the chapel of Gateshead, known to us only as the scene of a foul murder committed on Copsi, Earl of Northumberland.

ON THE TRADE OF NEWCASTLE PREVIOUS TO THE REIGN OF HENRY III., WITH A VIEW OF ITS RELATIVE IMPORTANCE AS COMPARED WITH OTHER TOWNS AND THE GENERAL COMMERCE OF THE KINGDOM.

The Castle of Newcastle was built by Robert, the eldest son of William the Conqueror, A.D. 1080; and under the shelter of its walls a town sprung up, which in the course of a few years became a place of considerable commercial importance.

The first royal charter to the burgesses on record was granted by Henry II., and confirmed in the second of John; but, long before this, Newcastle was a borough by prescription, governed by its own laws and customs, under a provost appointed by the crown.

A record of these "laws and customs, which the burgesses of Newcastle-upon-Tyne had in the time of Henry (I.), King of England, and which they ought to have," has fortunately been preserved, of which Brand has published a very faulty version, from an ancient register-book of the Priory of

Tynemouth, in the possession of the Duke of Northumberland.

Another, and more accurate copy, has since been discovered in the Tower, and printed in the preface to the first volume of the Acts of Parliament of Scotland, the learned editor of which does not hesitate to assign to the transcript a date as early as the reign of Henry II.

The great importance and curiosity of this code are evidenced by the fact, that it was not only adopted by Hugh Pudsey, Bishop of Durham, as the model of his charters to his boroughs of Gateshead and Sunderland, but that the celebrated Leges Burgorum of Scotland, instituted by David I., and dated at Newcastle, which was then in his possession, are copied nearly verbatim from it.

So fully, indeed, did the boroughs of Scotland acknowledge the customs of Newcastle as precedents for their own government, that they were in the habit, in cases of difficulty not provided for in their written laws, of referring for information to the burgesses of this town. Of references of this kind several very interesting instances will be found in the volume of the Acts of Parliament of Scotland before cited.

The "laws and customs" are particularly valuable, as illustrative of the trade of Newcastle, and the general commerce of the kingdom, at a period when our sources of information are so extremely meagre. A table of tolls is appended to the copy in the Tynemouth Register, and is incorporated with the Scottish Laws, which furnishes a fuller list of the articles of merchandise of the period than any contemporary document.

The constitution of the borough was well adapted to induce an influx of settlers. A year's residence entitled a stranger to the privileges of a burgess, and a year's undisputed possession of land within the borough constituted a valid title. The son of a burgess, resident under his father's roof, was entitled to the same advantages as his father. The immunities of the borough were—freedom from the degrading and servile exactions to which the peasantry of the country were subject, as heriot, merchet, bloodwit, and stengidswit; exemption from the jurisdiction of courts beyond the borough; the non-existence of wager of battle,

except on a charge of treason; and the limitation of pecuniary penalties to 6 oræ.

The burgesses had liberty to grind corn, and bake bread for their own use; and they might without licence sell their land and leave the borough.

As regarded the intercourse between the burgesses and the country people, the former could distrain the goods of the latter without licence of the provost, which was necessary before they could distrain upon each other. Money lent to a rustic was recoverable in the borough court.

The following laws relate more directly to commerce:—

I. All merchandise ought to be brought to land, except salt and herrings, which may be sold on board.

II. But if a ship calls at Tynemouth, and wishes to proceed on its voyage, the burgesses may buy from it what they please.

III. If a dispute shall arise between a burgess and a merchant, it must be determined within three tides.

IV. No merchant, not being a burgess, can buy wool, nor hides, nor other merchandise, without the borough; nor within it, except from a burgess.

V. None but a burgess can buy webs for dyeing, nor make them up, nor cut them.

From this last regulation we learn that the wool of this country was not generally manufactured at home, but sent abroad, and re-imported in the web. The operation of dyeing was, however, performed at home. In order to encourage a domestic manufacture, the importation of woollen cloth, either dyed or undyed, was afterwards prohibited. This prohibition, however popular it might be with the weavers, was naturally unpalatable to those towns where the dyeing of foreign fabrics had been extensively carried on. Accordingly, in the reign of King John, when any privilege might be obtained for money, we find the burgesses of Newcastle paying a fine of 25 marks for liberty to buy and sell woollen cloth, as in the time of Henry I. Nor were they singular in this. Maddox has extracted from the Pipe Roll of the 4th of John a list of towns which purchased the same indulgence. The relative

importance of the trade in each of these towns may be in some measure estimated by the amount of the fines which they severally paid on this occasion, which are here arranged in order, and the sums paid reduced to a uniform currency:—

	£	*s.*	*d.*
Lincoln	26	13	4
Newcastle	16	13	4
Northampton	10	0	0
Gloucester	6	13	4
Worcester	5	0	0
Norwich	5	0	0
Nottingham	3	6	8
Bedford	2	13	4
Huntingdon	2	0	0
Berkhampstead	2	0	0
St. Albans	1	6	8
Chesterfield	1	6	8
Baldock	0	10	0

Beverley, and some other towns in Yorkshire, as well as Stamford, Grimsby, Barton, and Sleaford in Lincolnshire, are included in Maddox's list; but he has not stated the amount of fines paid.

It will be observed that London, York, and other places, where weavers' guilds were successfully established, do not occur, as the restriction was in their favour. The same cause may account for the small amount paid by Nottingham.

The articles of export, besides wool and hides, which occur in the table of tolls, are the skins of foxes, martins, sables, beavers, goats and squirrels, feathers, lead, and miscellaneous articles, on which last the toll is charged by the load, or bundle.

The only imports specifically mentioned are alum, pepper, and ginger.

The articles on which market-tolls were exacted, are cattle, sheep, horses, pigs, herrings and other fish, corn, flour, salt, fat and lard. There was also a toll on woad, which was doubtless extensively used by the dyers.

Amongst the skins, it will be observed, occurs that of

beaver; nor does it appear to have been of extraordinary rarity, as it is classsd with the ordinary sorts, on which the toll was charged by the timber or bundle of forty, and not by the dacre or bundle of ten. The same classification is adhered to in the table of tolls appended to the Leges Burgorum of David I. of Scotland. Pennant says, "The latest account which we have of the beaver in Great Britain is in Giraldus Cambrensis, who travelled through Wales in 1188. In his time they were found only in the river Teivi. They must have been scarce even in earlier times. By the laws of Hoel Dna, the price of a beaver's skin was fixed at 120 pence, a great sum in those days."

How long the beaver lingered in the streams in the North of England or of Scotland it is vain to conjecture; but considering the scanty population of the Highland district of the latter country, as compared with Wales at an early period, it is no improbable supposition that it was plentiful in Scotland long after it had ceased to exist in the Teivi.

Although herrings are specially mentioned, no notice is taken of salmon distinct from other fish. The salmon fisheries of the Tyne, however, were at this early period singularly productive. A large portion of them belonged to the Bishop of Durham and the ecclesiastical bodies whose houses were adjacent to the river. In a charter of confirmation from William de Carilepho, the bishop, to Turgot, the prior, and the monks of Durham, A.D. 1103, no fewer than twenty-eight fisheries are enumerated amongst the appurtenances of the cells of Tynemouth and Jarrow; eight on the north side in the parishes of Tynemouth and Wallsend, and twenty on the south within the ancient parish of Jarrow.

From the western boundary of Jarrow to Hedwine Streams, the limit of the influx of the tide, there were on the south side of the river, according to an inquisition in the time of Henry I., about forty fisheries, the property of the Bishop of Durham, in the parishes of Gateshead, Whickham, and Ryton, and eight the property of the prior and convent. On the south side of the river, from Hedwine Streams to the sea, we have thus sixty-eight fisheries, and assuming them to have been equally numer-

ous on the north shore, the total number of fisheries within the flow of the tide would amount to 136. Allowing the usual complement of six men to a fishery, we should thus have 816 men employed; but making allowance for some of the upper fishing stations, described as stellings, rednets, &c., where probably not more than one or two hands were engaged, it may be nearer the truth if we estimate the total number at 500 or 600. Even this may seem an exaggerated computation, but it must be remembered that in the tidal district of the Tweed, which is less than half the length of that of the Tyne, there were employed within the last thirty years seventy boats and 420 men.

The supply no doubt must have been enormous, and little temptation could have existed to incur the dangers of the deep-sea fishing; so that, with the exception of herrings, noticed before, it is probable that little other fish but salmon was brought to market.

It appears from the records of the famous trial between the corporation of Newcastle and the prior of Tynemouth, in the reign of Edward I., that the fishermen of Shields were bound to bring all their fish for sale to Newcastle, and that the king was entitled to prisage on such fish, 100 out of each ship, whether haddocks or herrings, and from each boat the best fish.

It does not appear whether the salt was imported from abroad or made on the coast, but the latter is most likely.

The import trade would appear to have been carried on in the first instance chiefly in foreign bottoms, and its trifling amount is obvious from the provision as to buying portions of a cargo from vessels calling at Tynemouth. Laden vessels coming to Newcastle paid a toll of 4*d.*; and light vessels, 1*d.*

The burgesses, however, were not without ships of their own. Reginald of Coldingham mentions the circumstance of a person coming from Dunbar in East Lothian to Newcastle to purchase a ship. This was about the reign of Stephen. From casual statements of the same writer, both in his Miracles of St. Cuthbert and his Life of St. Godwin, we may infer that Newcastle was the chief mart

for the supply of the surrounding district at this period: a monk comes hither from Durham to purchase provisions; on another occasion a servant is sent to exchange corn for salt. In the Life of St. Oswine, published by the Surtees Society, is an account of a miracle wrought at the shrine of the saint at Tynemouth, on the occasion of an offering made by a wealthy burgess of Newcastle, called Faramannus, on the sailing of a vessel belonging to him, freighted with various wares for sale amongst the "South Angles." From the account it appears that these trading adventures were frequently undertaken by Faramannus, who, in making his offering, did as he was wont previous to the sailing of his vessels on other occasions.

We are told by Richard of Hexham, that when the county of Northumberland was surrendered by King Stephen to Henry, the son of David, King of Scotland, Newcastle and Bamborough were reserved. We have, however, abundant evidence that Newcastle was, during the greater part of his reign, in the possession of David, and was restored to the English crown, with Cumberland and the rest of Northumberland, by his grandson Malcolm, in the 3rd of Henry II. In the following year the Northumberland Pipe Rolls commence in regular series, and furnish us with a few notices of the condition of Newcastle at that period. Amongst the parties casually mentioned in connection with the town (besides William the moneyer, who will be more particularly noticed hereafter) we find Gervase the physician, Baldwin the goldsmith, Walter the dyer, Maurice the mason. In the 16th of Henry II. two smithies are mentioned, for the use of which the burgesses pay a fine of seven marks to the crown. In the 27th, we have evidence of the existence of a retail trade in wine, from a fine inflicted for selling it contrary to the assize.

The import trade in wine was at this period confined to a very few ports. Maddox mentions only London and Bristol in the reign of Richard I., to which may be added Southampton, Sandwich, and Boston, in the two following reigns. Mr. Frost, in his "Notices relative to the early History of Hull," shows from the Pipe Roll of the 6th of John, that wine was in that year imported into Hull, and some of it conveyed from thence to York. This was,

however, the king's wine, conveyed there probably for his own use from his continental dominions, and does not necessarily imply a regular trade. In the Northumberland Pipe Roll of the same year is a charge of 2*l.* 0*s.* 1*d.* "for the carriage of the king's wine from the Humber to Newcastle," being no doubt a portion of the same cargo. Four years previously is a charge of 2*l.* 13*s.* "for the carriage of sixty tons of wine to Newcastle, of which thirty tons remained at Newcastle, and the remainder was taken to Bamborough."

In the 18th of John we find, from the Patent Rolls, that Henry de Baileoe and Philip de Ulecot, the custodes of the county of Northumberland, supplied the garrisons of Newcastle and the other fortresses under their charge with wine purchased at Lynn fair.

The following notices relative to the port of Newcastle in the reign of John are derived from the Close Rolls.

On the death of Hubert Archbishop of Canterbury, which took place A.D. 1205, a ship belonging to that prelate was seized in the harbour; whereupon a writ was issued by the king to Robert Fitz-Roger, the sheriff, commanding him to deliver it with the cargo to the brethren of the Hospital of Jerusalem, on their finding security for the value, the same to be ascertained by appraisement. The archbishop held the wardship of the barony of Gilsland, in the adjoining county of Cumberland, during the minority of Robert de Vaux, and the vessel was probably laden with the produce of that estate.

In 1212, Richard de Umfreville had liberty to convey a cargo of corn from Boston to Newcastle, and orders were given to the king's bailiffs of his ports in Lincolnshire not to impede the departure of the vessel.

The same year, orders were issued to the Archdeacon of Durham and Philip de Ulecot, who jointly exercised the office of sheriff of Northumberland, to release certain goods which had been seized at Newcastle belonging to citizens of Perth, and generally to allow free passage through the king's territories to all subjects of the King of Scotland with such goods as they could prove to be their own property.

In 1213, the same parties are ordered to restore the

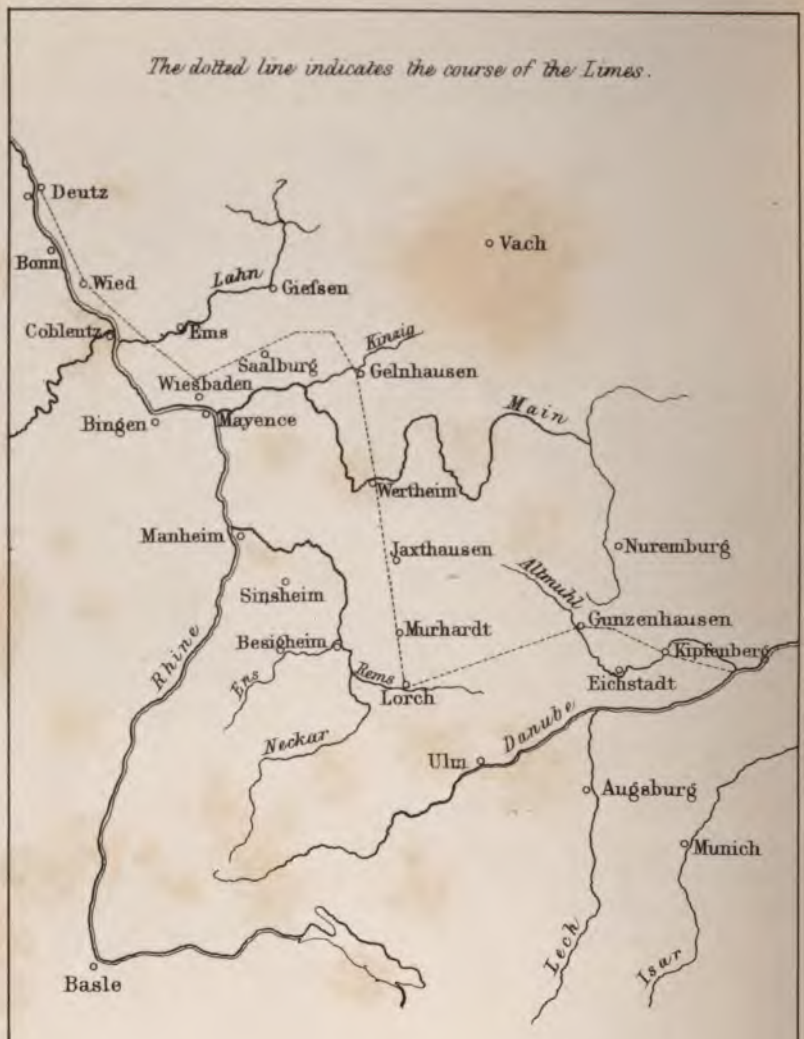
vessels and merchandise detained at Newcastle to certain merchants of Lynn, the tenants of the Bishop of Norwich.

The same year, Philip de Ulecot is ordered to restore a vessel and cargo detained at Newcastle, the property of Saier de Quinci, Earl of Winchester.

In 1215, Philip de Ulecot is directed to restore a vessel claimed by Walter de Dam, detained in the port of Newcastle, provided the above Walter can show that he is the owner, and that the vessel was seized since the treaty between the king and the Earl of Flanders.

By far the most important document which we possess, respecting the early commerce of England and the relative importance of the trade of her several maritime towns, is an account rendered to the Exchequer in the 7th of John, of the produce of the *quindena* or *quinsieme*, being the fifteenth part of the goods of all merchants throughout the kingdom, granted to the Crown. This account, first noticed by Maddox, in his History of the Exchequer, has been printed at length, with other interesting records, by Mr. Frost, in the Appendix to his work already referred to. It comprises all the ports from Newcastle to the Land's End, exclusive of the county palatine of Durham. No account is extant of the amount collected at the ports on the western coast; which, indeed, with the exception of Bristol, and perhaps Chester, would be of trifling consideration. The total sum contributed by the eastern and southern ports was 4958*l.* 7*s.* 3½*d.*, of which Newcastle paid 158*l.* 5*s.* 11*d.*, being the eighth in amount of contributions. The several payments being as follows:—

	£	*s.*	*d.*
London	836	12	10
Boston	780	15	3
Southampton	712	3	7½
Lincoln	656	12	2
Lynn	651	11	11
Hull	344	14	4½
York	175	8	10
Newcastle	158	5	11
	£4316	4	11



MAP OF PART OF GERMANY,

TO ILLUSTRATE Mr JAMES YATES'S MEMOIR ON THE

LIMES RHÆTICUS AND TRANSRHENANUS

OF THE

ROMAN EMPIRE.

To face p. 33.

J.R.Jobbins.

The sums paid by the eight next in importance, are:—

	£	s.	d.
Grimsby	91	15	0½
Winchelsea	62	2	4
Hedon	60	8	4
Yarmouth	54	15	6
Fowey	48	15	7
Yarm	42	17	10
Dover	37	6	1
Barton-on-Humber	33	11	9
	£431	13	3½

The remaining 210*l.* 9*s.* 1*d.* were collected in twenty different ports, of which Scarborough contributed 22*l.* 0*s.* 4½*d.*, Immingham 18*l.* 15*s.* 10½*d.*, Selby 17*l.* 16*s.* 8*d.*, Whitby 4*s.*, and Coatham 16*s.* 11*d.*, being the ports not previously enumerated north of Boston. The large sums set opposite to Boston and Lynn, include a percentage on the merchandise exposed for sale at the fairs at those places. Newcastle had as yet no fair, though one was established in the course of this reign. The charter by which it was granted is not extant, but there exists a charter of Edward II., which confirms king John's grant of a fair at Lammas, and extends the period of its continuance from two days to twenty-eight.

There is an entry on the Patent Roll of the 6th of John, which, although mutilated, still furnishes considerable information on the subject of this quinzime, which is undoubtedly the earliest subsidy on record. It seems to have been levied on merchandise only, and not on moveables or personal property generally; and even as regards merchandise there were some exceptions. These extended to corn, wine, salt, wax, furs, and wearing apparel.

The burgesses of Newcastle were governed up to this time by the laws and customs which existed in the reign of Henry I., with the additional privilege granted to them by Henry II., of freedom from toll, passage, pontage, hanse-duty, and customs for all goods which they could identify as their property, throughout the kingdom. This charter, which is not itself extant, is confirmed by another of the 2nd of John. In the month of February in this year the king was at Newcastle, and was presented by the burgesses with forty marks and two palfreys, as a welcome

(pro bono adventu). Besides the confirmation charter he executed another, whereby he demised to them their own town in fee-farm. Hitherto, the borough had been rented by the sheriff of Northumberland in the same way as the other royal demesnes within the county, the lessee paying a certain annual sum, and relying for a return on the rigid exaction of rents, tolls, and customs from the burgesses. A very general anxiety prevailed amongst the boroughs throughout the kingdom, to commute these payments to the sheriff for a perpetual fixed rent, the rent offered being always considerably more than the actual receipts which found their way into the Exchequer. Thus, the rent paid by the sheriff for Newcastle was 50*l.*, and the fee-farm agreed to be paid by the burgesses directly to the Crown was 60*l.* The former grant, founded on this agreement and enrolled on the Charter Roll, was deliberately set aside, and the following memorandum entered on the Pipe Roll: "It was afterwards ordered by the king's writ, that neither the above rent nor the increment (*i. e.* the additional 10*l.*) should be exacted; because the king has granted to the sheriff, that he shall answer for the said town, as he was wont, before the increment was imposed." Similar instances of bad faith were exhibited at the same time, in the case of the City of Carlisle, and of other royal manors, both in Cumberland and Northumberland. Hardyng in his Ryming Chronicle asserts, that William Rufus granted the town to its inhabitants at a "free rent." This is proved to be inaccurate by the indisputable testimony of our public records, and our confidence is very much weakened in the further statement which rests on his unsupported authority, that the same king devoted large sums derived from the vacant bishoprics and abbeys to building the town of Newcastle and surrounding it with a wall.

The citizens of Carlisle made no further attempt to emancipate themselves from the exactions of the sheriff of Cumberland; but the burgesses of Newcastle persevered, and were ultimately successful, although on terms which were at the time extremely onerous. In the 14th of John they obtained the long-desired enfranchisement, on payment of an annual fee-farm of 100*l.* That this was more than its actual value at the time, although the bargain was ulti-

mately a most advantageous one, appears from the following interesting return to an inquisition in the reign of Edward I.:—"It is found that the town is worth 200*l.* per annum, if it were in the king's hands, but that king John had granted it in fee-farm for 100*l.*, when it was not worth so much; but that it is now so increased by coals as to be sometimes, although not always, worth 200*l.* per annum."

In the 17th of John the burgesses of Newcastle obtained another charter, conferring upon them very ample privileges, founded for the most part on their ancient customs, assimilated in some respects to those of Winchester, which formed a favourite model for charters at this period. By a clause in the charter provision was made for the establishment of a "merchant-guild," which still exists, under the title of the "Merchant Adventurers of Newcastle-upon-Tyne."

In the following reign the burgesses obtained the additional privilege of electing from amongst themselves their own chief magistrate, who, with the title of mayor, was entrusted with those duties which had hitherto been discharged by the præpositus, or provost, appointed by the Crown. About the same time the commerce of the town received a powerful impetus by the opening out of those coal-fields, which were destined in process of time to supply the metropolis and a large portion of the kingdom with fuel, and to extend our foreign trade to all parts of the globe. To trace the progress of this branch of our national industry is beyond the scope of the present essay, which is designed merely with a view of collecting and placing in an accessible shape the scattered notices which have been fortuitously preserved of the trade of the port and district during the six first reigns from the Norman Conquest.

One material branch of this early commerce, the preparation and export of lead, has been barely alluded to, as it appeared more convenient to reserve to the last a connected statement of the particulars which can be ascertained respecting it. Lead occurs amongst the articles on which a toll was exigible in the reign of Henry I., the customary payment being fourpence per load. The mining district, of which Newcastle forms the natural outlet, extends into the three counties of Northumberland, Cumberland, and Durham, the mines of Cumberland being those respecting which we have the earliest information. No evidence has come

down to us, by which we can determine whether any of these northern mines were worked during the Roman period. That lead-mining was actively prosecuted by the Romans in Britain is placed beyond a doubt, by the discovery of pigs of that metal marked with the imperial stamp in various parts of the island. None of these have, however, been found further north than the West Riding of Yorkshire, though it is far from improbable that some of them have been the produce of the mines now under consideration.

Of mining operations in Britain during the Saxon supremacy, previous to the reign of Edward the Confessor, we have no precise information; but several lead mines in Derbyshire are noticed in Doomsday Book. Unfortunately that invaluable record does not extend to the four northern counties, and we must refer for our earliest general information respecting them to the isolated Pipe Roll of the 31st of Henry I. There we meet with the first notice of the Cumberland mines, which occur under the attractive title of the Silver Mine, and afford a rental of 40*l.* From this it is evident that at this remote period the art of extracting the silver from the lead was known and practised; and to the presence of a considerable proportion of the former the value of the ore to a great extent was attributable. Throughout the reign of Henry II. the mines of Carleol, as Cumberland was anciently designated, were leased to the king's moneyers, and furnished a ready supply of bullion. William the Moneyer resided, as has been noticed before, in Newcastle, and occurs under the various designations of the son of Erembald, Erkenwald or Erkenbald, and the son of Holdegar. He farmed the mines for twenty-three years, at a rent varying from 100 to 500 marks, the great increase being apparently occasioned by the opening out of a new mining district, which, although included under the title of the mines of Cumberland, was in fact situated in Northumberland. The stipulated rent was, however, far beyond the actual value, and we find the lessee at the termination of his tenancy involved in debt to the Crown for arrears to the amount of upwards of 2000*l.*, his house in Newcastle escheated, and his fortune irretrievably ruined. During the next three years the mines were in the hands of several adventurers, at a rent of 200*l.* per annum; but little more than one-half of this was realized.

The next year William the Moneyer again entered on the mines, with Roger de Stuteville, Robert de Vaux, and Reiner Dapifer as his sureties, the rent being reduced to 220 marks. Of this reduced sum more than a third had to be made up by his sureties; and during the next two years no lessee could be found. After producing, in the hands of the Crown, the first year 61*l.* 11*s.*, the second 73*l.* 9*s.*, they were at length leased to Allan the Moneyer, at 100*l.* per annum. This rent was regularly paid till the 2nd of Richard I., when the county of Northumberland, with that portion of the "mines of Carleol" which were within its limits, was granted to Hugh Pudsey, bishop of Durham. So unproductive had the mines within Cumberland itself become, that when those of Northumberland were taken away, the remainder produced but 10*l.* In the 6th of Richard the whole were reunited, and let to Allan the Moneyer at 50*l.*, which was a larger sum than they ever produced in the succeeding reign, during which they were worked by the sheriffs of Cumberland on behalf of the Crown.

Until the reign of Henry II., the only mint north of York was at Durham, which returned to the bishop a revenue of ten marks.

When a moneyer was established at Newcastle, the bishop's profits were reduced to three marks. This information, supplied by the survey of his Palatinate made by Hugh Pudsey, and known as the "Boldon Buke," negatives the supposition that Henry I. had a mint at the latter place, and Mr. Ruding has shown that the coin of that monarch, which is figured in Brand's Newcastle with the mint-mark Ne, may with propriety be referred to Newark, where the bishop of Lincoln had a licence to establish a mint during this reign. From the 4th to the 29th of Henry II., William the Moneyer was established at Newcastle, and money from his dies is not of unfrequent occurrence.

His successor in the farm of the mines, Allan the Moneyer, was settled at Carlisle, and from his mint there can be no doubt those coins were issued, with the mint-mark of Carduel, which are noticed by Ruding under the reign of Henry II. Although his name occurs as a moneyer during the whole of the reign of Richard, we have

no further specimens of his art; nor indeed have *any* coins descended to us of the reign of Richard. The coins of John are confined to Ireland and his continental dominions, although moneyers undoubtedly existed in several English towns, and amongst others, in Carlisle, during his reign.

We do not again meet with money coined at Newcastle, till the reign of Edward the First, during which, and that of his successor, the coins minted here are of frequent occurrence.

Ruding, on the authority of North's MSS. Notes to Folkes' Tables of British Coins, mentions William the Moneyer as having a mint at Carlisle, a mistake which has originated in his being the lessee of the mines of Carlisle. With reference to this William, it should be stated that, in addition to the mines of Cumberland and Northumberland, he accounted in the Cumberland Pipe Roll of the 9th of Henry II. for 20*l.*, as the rent of the mines in Yorkshire. This explains a letter written, in the reign of Henry III., by Robert de Veteri Ponte to Hubert de Burgh, Justiciar of England, which is preserved in the Wakefield Tower, and is thus abstracted in Mr. Hardy's Calendar: "A mine had been discovered in the bailiwick of Richard Phitun, Constable of Richmond, viz. in the valley of Swaledale, which had always belonged to the Castle and Honor of Carlisle. He begs that the Constable may be ordered to allow the king's miners to work the mine, and to give account of the profits thereof to the bailiffs of Carlisle." From the circumstance of the mines of Cumberland and Northumberland being generally in the hands of a lessee, we do not find in the Pipe Rolls any details of the shipment of lead as an article of merchandise; but several entries occur of shipments made by the king's order as gratuitous contributions to the building or restoration of churches in Normandy. Thus, in the reign of Henry II., we find the following:—

"Anno 13. Paid 13*l.* 14*s.* 1*d.* for the freight of lead from Newcastle to Caen, by the king's order.

„ 22. Paid 12*l.* 19*s.* 4*d.* for the freight of two ships from Newcastle to Rochelle, with lead given by the king to the church of Grosmont.

„ 25. Paid 8*l.* freight from Newcastle to Rochelle, of lead given by the king to the church of Clarevalle."

The above extracts are from the Pipe Rolls of Northum-

berland; and those of Cumberland exhibit corresponding entries of acquittances to the lessee of the mines, for the value of the lead supplied:—

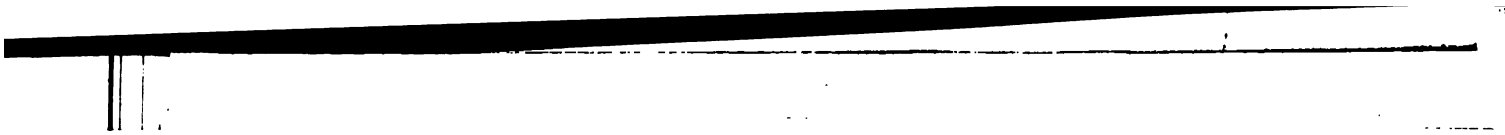
"Anno 14. Fifty-five loads of leads delivered to the Sheriff of Northumberland, to be conveyed to Caen, 42*l.* 15*s.*
„ 22. Lead for works at the Lord's House at Grantemonte, 40*l.*
„ 25. One hundred loads of lead, delivered to Brother Simon, for the works of the church at Clarevalle, 66*l.* 13*s.* 4*d.*"

When lead was supplied from Cumberland for works in the south of England, it seems to have been carried by land, for which indeed the old Roman road, called the Maiden Way, which passes through the mining district of Alston, afforded some facilities. Thus the Cumberland Rolls show that a large quantity of lead was furnished for works at Windsor Castle, but there are no corresponding charges for freight at Newcastle. The Cumberland mines were chiefly at Alston, a manor within the Liberty of Tindale; and it is very remarkable that although this Liberty was a possession of the kings of Scotland, within which they exercised every other royal prerogative, the title of the Crown of England was still paramount as regarded the ores impregnated with precious metal. The Northumberland portion of the mines was spread over the wide district of Allendale, in which, as well as in Alston, mining operations are still prosecuted with undiminished success, although at many periods from the time of Henry II. downwards the supply has been to all appearance nearly exhausted. New veins have still been laid open, and it is to be hoped that fresh discoveries will prolong for an indefinite period this prolific source of wealth and employment.

The mines of Durham, like those of Carleol, were the property of the Crown till the reign of Stephen, who granted to his nephew, Hugh Pudsey, bishop of Durham, the mines of Weardale, with all the necessary powers and privileges for working the same. It is probable that these mines were already worked by the bishops under lease, as we know that they possessed a mint at Durham at a much earlier period. Coins minted at Durham in the reign of William the Conqueror, or William Rufus—for we have no means of distinguishing between them—have been discovered.

Several entries relative to the produce of the mines and the mint occur in the Pipe Rolls of Richard I. and John, during vacancies in the see of Durham, but these are unconnected with the trade of Newcastle, and foreign to the present inquiry. During the early Norman reigns the Tyne was the port of shipment for the bishopric of Durham, and the bishops jealously guarded the rights connected with its navigation, maintaining for themselves the same privileges on the southern bank, which were possessed by the burgesses of Newcastle on the northern. On the acquisition, however, of the Wapentake of Sadberge by Hugh Pudsey, the facilities presented by the situation of Hartlepool seem to have attracted his notice. Under his episcopate and that of his successors it became the emporium of the commerce of the Palatinate, and the control of the navigation of the Tyne was, after many struggles with the borough of Gateshead and the monasteries of Tynemouth and Durham, ultimately transferred to the exclusive conservancy of the corporation of Newcastle.

The mining operations in the county of Durham were not confined to lead, for the Pipe Rolls of John include amongst the receipts of the bishopric the proceeds of sales of iron. In the 14th of that reign, the custodes of the see exported from Newcastle to Portsmouth, for the king's use, 320 bars of iron. If this metal now formed an article of the general commerce of the port, the export must have commenced subsequently to the compilation of the table of tolls appended to the laws and customs of Henry I., as no mention of it occurs there.



DURHAM BEFORE THE CONQUEST.

(*With a Map.*)

BY W. HYLTON DYER LONGSTAFFE, ESQ., F.S.A.

DIVISIONS.

"THE Land between the Waters" of Tyne and Tees was pled by Ptolemy's Brigantes, and, at the composition of Notitia, was under the government of an officer called *Britanniarum*.

Nennius represents Hengist as inducing the British king nvite his son Ochta, and with him Abisa, and give them northern regions near the *murus* called *Gual*. It is ed that they came, and, after sailing round the Picts wasting the Orchades, occupied many regions beyond Fresican or Frenessican sea, which was between the lsh and the Scots, as far as the confines of the Picts. This ription, of whatever authority it may be, seems to point he lowlands of Scotland rather than to Northumbria, ch was colonized by Angles and not by the Jutes, over ch Hengist (whatever his own descent might be, or whe- he is one man or many men) reigned.

da, of Northumbria, "began to reign" a century after period assigned to Hengist's invasion. There is nothing he Saxon authorities to suggest that he was a foreigner. the other hand, among his progenitors appears Beornec, hree or four descents from whom we find Soemil first rating Deur from Birneich. Ida is stated to have united ngueirin and Gurbinneth, which two regions were in one on, that is Der a Berneth—in English, Deira and Ber- a."* On Ida's death, Soemil's descendant, Ella, dis- ed Deira, and became "the first *king* of the Deirans." father was "*Iffus dux*."† It was a common statement until Ida's time Northumbria was governed by dukes

* Nennius. † Flor. Worc.

or heretochs, and the reason given by Nennius is that the barbarians continually derived succours from Germany, and that kings came and ruled over their countrymen in Britain until the time of Ida, who appears as a successful founder of a dynasty in his ducal race.

The Teutonic settlement of Northumbria must have been very early, and perhaps a mixture of races was the consequence of large immigrations at various times.* Mr. Kemble has shown that the dialect contained exclusive peculiarities, elsewhere only found with the old Norse and Frisic people, and probably derived from the latter. Nearly every Anglo-Runic inscription is referable to Northumbria, but the names are not those of the Norse. They are those of the Marcomanni and Nordmanni, who were identical with the Angles and dwelt north of the Elbe between the Jutes and Saxons.†

Bernicia and Deira did not at first extend to the western coast, but were separated from it by "the Scots who inhabited Britain."‡ The statement that the land between the Tyne and Tees composed part of Bernicia,§ although it has been contradicted,‖ agrees with several circumstances. On the division of the Northumbrian see, in 678, Bosa ruled at York over the province of the Deirans, and Eata at Hexham and Lindisfarne over that of the Bernicians.¶ The two latter places were, a year or two afterwards, constituted the seats of separate dioceses, and the see of Hexham is stated to have extended to the ocean on the east, the Tees on the south, the Alne on the north, and Wetherhale on the west.** The ocean limit of the see of Hexham did not perhaps extend further than between the Wear and the Tees. Bede, dwelling between the Tyne and Wear, interested himself in the story of St. Cuthbert to the exclusion of the Hexham prelates, and mentions the journeyings of the saint as far south as the latter river. On the extinc-

* The pedigrees ascribed to the respective kings of Bernicia and Deira are entirely distinct, only centreing in Woden. Bede and the Chronicles derive the East, Middle, and West Saxons from the region then called that of the Old Saxons, and all the Northumbrians from the Angles; yet Nennius twice calls the latter the *genus Ambronum, id est Aldsaxonum*.

† See Kemble, in Archæologia, 28.

‡ Bede.

§ Richard of Hexham. Leland's Itin. vii. 68; ix. 54; Collectanea, iv. 99, ex libro de vitâ S. Joannis. Camden.

‖ Leland's Coll. iii. 397; iv. 40, ex chronico incerti autoris apud Wytby. So also in his Decerpta ex libro incerti autoris de Episcopis Lindisfarnensibus.

¶ Sym. Hist. Dunelm.

** Richard of Hexham.

tion of the see of Hexham, 54 years before the great Danish devastations,* the Lindisfarne bishops, contented with their sway, did not assume the vacant diocese until the land between Tyne and Tees was given to bishop Eardulph "in augmentation of the episcopate, for long before that time the bishops of Hexham had ceased."† Notwithstanding, Eardulph had already removed his episcopal seat to Chester-le-Street, upon a grant to the church of the district between the Wear and Tyne, not by way of addition to his episcopal functions but as the absolute property of his church. We can understand a grant of an estate to a church in another diocese, but not an assumption of episcopal dignity in the new possession, especially in the face of the statement of non-interference with Hexham. The granted land extended on its west side only to Deor-strete (Watling Street), and that great road probably divided the two dioceses north of Wear.

The united dioceses were again termed the see of the Bernicians,‡ but the civil boundary between the two divisions of Northumbria had, in the disturbances which racked the kingdom, begun to waver. Billingham, the south-east parish of Durham, had (cir. 862) been ravished from the church by Ælla, king of the Deirans, but he had endeavoured to seize the whole of Northumbria, and had perhaps stipulated for Durham in his hastily-formed peace with a dethroned predecessor. This arrangement probably continued until the kingdom sunk into an earldom, the country north of the Tyne being ruled by creatures of the Danes, the region south of that river by the Danish leaders themselves. On the division of the earldom in 969, by means of the Tees, it is remarked by Wallingford that the two kingdoms became two earldoms or counties; and during the Danish division and a temporary division by the Tyne of the earldom, the historians describe the northern portion as "beyond Tyne," not as "of the Bernicians." At last Yorkshire ceased to be ruled by earls, and the northern earldom at its close was identical with the medieval county of Northumberland, the Tees being its southern boundary.

Within the limits of the earldom, which possessed pecu-

* Prior Wessyngton's extracts in Scrip. Tres. Surtees Soc.

† Symeon de Gestis. Hovedun per Leland. Wessyngton.

‡ Sym. Hist. Dun. 126.

liar liberties, remnants of its independence, arose smaller franchises by grants of land with all its privileges, and without reservation of services or rents.* These existed, more or less freely, long after the kingdoms and earldoms out of which they were carved had ceased. Already, in the Norman period, the bishop of Durham possessed some of the most extensive of these liberties. His largest possession stretched southward from the Tyne to certain portions of the river Tees, comprising defined districts or shires, such as Werehale, (the early possession granted between the Tyne and Wear,) Alcletshire, Quarringtonshire, and Nortonshire. His cathedral and conventual body had Staindropshire, Billinghamshire, and many other places between the Tyne and Tees, a kind of *imperium in imperio*, by the generosity of the bishop who had obtained the possessions of the earlier Saxon monasteries. The remaining lands between the rivers formed the shattered and irregular wapentake of Sadberge, a district out of which many of the Durham liberties had been carved. At last Richard I. sold it to the bishop. In the grant of its services by name, those of its mightiest barons, the Brus and Baliol, were omitted, and the annexation of their fees (that of the former extending from Castle Eden Dene to Tees, and appearing to be identical with the ungranted remains of a subdistrict called by the Saxons Heorterness) was always very doubtful. The bishops, however, were allowed to have at least a naked right over both, and the liberties of Durham and Sadberge were considered to include the whole Land between the Waters. These, and such other of the episcopal franchises as were acquired during the existence of the Northumbrian earldoms, constituted the temporal "Bishoprick," or, as at length, from the bishop's rank (scarcely the title) of a *comes palatii*, they were designated, the county (or counties) palatine of Durham and Sadberge. In the ordinary sense of the term county they were still parcel of Northumberland and Yorkshire. The county palatine is now confined between the two waters, and the palatine rule is vested in the Crown.

* These effects seem to have been matters of course in Northumbrian possessions of ecclesiastics. The twelve bóclands of ten hides each, given by Oswin on his daughter's entering Hilda's monastery of Heruteu, were "freed from earthly warfare and earthly service, to be employed in heavenly warfare." So, when Benedict Biscop became a monk, he surrendered his lands to the king that they might do military service.—Kemble, i. 303.

THE COAST AND STREAMS.

The natural features of Durham must have undergone very considerable changes since the Conquest, by the silting up of rivers and morasses, a general coating of the surface of the ground, and a decrease of the coast land.

In draining the morass of Baydales, near Blackwell on the Tees, numbers of gnarled oaks, huge, black, and sound, were discovered. They had fallen from the banks above, or had been swept thither by the river. Further down the Tees, a little south of the present course, a canoe, measuring about 22 feet by 18 or 20 inches, and carved out of a solid trunk, was discovered in forming the Leeds Northern Railway near Yarm, at the depth of 18 feet below the surface. Ptolemy's Dunum Bay has been placed by Horsley at Tees Mouth; a circular camp or Dun occurring on Eston Nab, and the extensive estuary of Tees appearing to fulfil the character of a κολπος better than the less striking indentation at Whitby. Ptolemy Virgil speaks of it as "an entrie into the which out of Germanie men doe commodiouslie direct their ships."

Proceeding northwards, we find the trace of Roman works in the sands of Seaton, and some idea of the waste committed by the sea may be gathered by the vast submarine forests which extend along the coast. In Hartlepool Slake, and for nearly two miles south of it, between the two water marks, the soil is found to be filled with the remains of trees of large dimensions, and heaps of agglomerated leaves containing hazel nuts in abundance. Among these decayed vegetable remains great numbers of Pholades multiply. The promontory of Hartlepool, however, was always during the historic period of such a form as to justify the designation of island.

The destruction of property at Wearmouth by the sea has been most serious. The tranquil harbour of rest, lauded by Malmesbury as receiving ships borne by propitious gales into its bosom, which attracted Ptolemy's notice in preference to the Tyne,* and where Malcolm of Scotland discovered his future queen, with Edgar Atheling

* Roman remains have occurred on both sides of Wearmouth.

and other noble Saxons, concealed before sailing for his kingdom, has totally vanished. In 1822, between the Tyne and Wear, at about a mile south of Whitburn, the stumps of seven trees in the sea, at a distance of about 100 yards from high-water mark, were seen. The fords of Ford, Pallion, and Sunderland no longer occur on the Wear. The Sunderland ford perished by an excessive inundation in 1400.*

The principal alteration at South Shields is the disappearance of its insular character which is shown in a plan of Tynemouth in Cott. MS., Augustus I. ii. art. 7, on which the Romans fixed their fort, and which even to a recent period was insulated by high tides, which swept into the portion of the old water channel called the mill-dam.

The course and imposing nature of the Wrekendike, and the general direction of Roman roads, point to the mouth of the Tyne as an important port of Rome in these parts. Dr. Hunter mentions "two elevated pavements—the one at the west end of South Shields, the other on the north side of the river near the end of the Roman wall—proper for safe landing at different times of the ebbing and flowing tide." In the Saxon period, when greater security was necessary for defence against pirates, and shipping was of an inferior character, the "port of king Ecgfrid, that is Gyruu,"† is mentioned. "Ecfrid's port was the bay which extends from Tyne to Girwi. It extended more inland as far as Bilton [Boldon], about three miles above Girwi, which anciently small ships reached. A rivulet enters this bay."‡ The rivulet was in fact the means by which the port extended more inland. It was the Don, which "by Garaw, or rather by Dancaster, descends to the Tyne."§ The Don, or Hedworth Brook, is still navigable at high water to the place where it is crossed by the Wrekendike, and Hodgson thought that goods might be delivered here in the Roman period. Hutchinson supposed that some of the feeders of the Don had been drained off by coal-workings. Its broad estuary (Donemuthe—La Buche de Don) became meadow, and the *sinus* or bay is the amphibious "Jarrow Slake." The change was probably in full operation in Saxon days,

* Wearmouth Rolls, Sur. Soc. 248.
† Sym. H. Dun.
‡ Lel. Collect.
§ Ibid.

Gyrwu signifying a marsh. Most of the rivers of Durham retain their Celtic names. Some antiquaries have endeavoured to give Ptolemy's classical variation of the Wire or Wear, Vedra, and also the Tomemuth and Donemuth of the Saxon writers to Tynemouth. The first theory is inconsistent with the ancient size of Wearmouth bay and its Celtic nomenclature. Donemuth of course is Jarrow. Tomemuth is the mouth of the Tame, Team, or Tume, above Gateshead, on the south bank of the Tyne. Halfdene, the Danish prince, wintered here.* The Saxon chronicle, in mentioning the event, uses the expression "and nam wint-setl be Tinan thære ea," meaning probably the strong post of the King's Meadows, a capacious island in the Tyne opposite Team-mouth.

The *flumen Fresca* of Bede, where the monastery of Jarrow had property, which was changed for land nearer to the convent, is unknown. Bede's hills on the north of the Derwent contest the honour of Bede's nativity (which took place in the territory of the joint monastery of Jarrow and Wearmouth) with the old claims of Monkton and the new ones of Sunderland. Some rivulets, scarcely *flumina*, flow past them.

THE FORESTS, AND THEIR TENANTS.

The very name of Durham's main artery, the *Deor* Street (now Watling Street), is understood to signify the Forest-way. Some of the deep woods; such as have already been alluded to; such as supplied the noble oaks which were found in the Tyne† and Warden Law;‡ or such as, sunk in the

* Symeon, Hist. Dun.

† In 1848, in the removal of Cockraw sandbank in the Tyne, a stupendous oak tree was found, 16 ft. 6 in. in circumference, and 18 ft. long. The surface of the side on which it lay was covered with a metallic coating of iron pyrites, which, with another scaly covering of pyrites, formed a kind of gallery. This, in some parts, was from half an inch to an inch and a half apart, and had in many places the intermediate space filled up with beautiful crystals of pyrites of a minute size like needles. The tree was presumed to have fallen and remained in the position in which it was found, and imbedded with it were quantities of small pieces of branch wood and hazel nuts, most of which were perforated at the top and empty. The wood or bark below the pyrites appeared, to the extent of three-fourths of an inch, to be completely charred, and for three or four inches the wood, though it had not changed its colour (the laminæ being quite distinct), was irretrievably decayed. The rest was sound, and the central table in the library of the Norman keep in Newcastle shows the character of the wood.

‡ An oak tree 60 (?) feet long and a cart-load of nuts were dug up at Warden Law.—*Parson and White's Directory.*

morasses between Stanley and Lanchester, or, in the Weardale glens, sheltered the wild boar commemorated on a Roman altar; might well exist throughout the period before the Conquest, and give employment in after times to the bishop and his homagers in their great annual hunt. But it seems to be too certain that to a great extent their savage aspect could not exist with the semi-civilisation of the country in the time of the Romans,* and that it was owing to the exhaustion consequent upon their misrule and the troubles which befel the Saxon settlement. The district, says Malmesbury, where Bede was born and educated, "was formerly set with the fair and perfumed flowers of monasteries and abundance of cities built by the Romans. But, at his period, wasted in old time by the Danes, in latter days by the Normans, it presented nothing that very much could allure the senses." John of Tynemouth relates that in the early periods of Saxon dominion the whole country between Tyne and Tees was one vast desert, habited by wild beasts. Wrdelau, where St. Cuthbert's body stayed its course, was *medio in campo*, and *therefore* uninhabitable. The site of Durham city was covered with dense wood, with but a small cultivated patch in the centre, and even in the Conqueror's time the country about Newcastle was rarely cultivated.

Scarcely less changed than the aspect of the county is the character of its tenants. Hereteu (Hartlepool), Bede's "Island of the Stag," has long lost its beautiful deer, but there remains ever and anon evidence of their former existence.† The western dales retained them to Leland's period. The antlers and bones of the Cervus Megaceros, or extinct Irish elk, occurred in a brickyard of Messrs. R. W. Swinburne & Co., at South Shields, near which is the ancient Heortedun. They are now in the Sydenham Palace, and were found in a compressed stratum of dry peat, which lay beneath two feet of ordinary soil and a seam of clay twelve feet thick.‡ A huge antler of the segh deer, discovered at

* "O happy Britain—wherein are woods without wild beasts and the fields without noisome serpents." So Camden quotes some writer of Constantine's time.

† Similar proofs have occurred at Carr House, near Seaton, and at Dalton Percy: in the latter instance, among gravel at a depth of five feet from the surface.

‡ The bones of the elk occurred recently in a mass of refuse below the roadway of the Bailey in Durham city. Implements of man and bones of his domesticated animals attended them.

Mainsforth, is figured in Hutchinson's Durham. The extinct *bos longifrons*, as usual, was kept by the Romans, and droves of wild white cattle for long adorned the parks of Auckland, Barnard's, Brancepeth, and Raby Castles. Descendants they might be of that fierce aboriginal race, the visage of which in the Roman age may be gathered from a sculpture in the castle of Newcastle. With the Weardale altar, dedicated by a grateful prefect to Silvanus for the capture of a boar, which "multi antecessores ejus" in vain attempted to destroy, before us, we may not wonder at the later traditions of the Pollard, Aycliffe, and Brancepeth brawns. Wolves, too, were familiar to the minds of the people, who talked of them with more or less truth to a very recent period. Reginald, in the twelfth century, variously translates Wolsingham into the dwelling of Wlsus, the habitation of a wolf, and the howling of a wolf expressed in the English tongue. Richard Ingeniator, dealing with property at Wolviston (called Olveston in William Rufus's time), seals with a wolf.* In the same century a great increase of wolves took place in Richmondshire. In the life of Alderman Barnes, of Newcastle, a Barnes of Hartforth near Barnard Castle is said to have been "called Ambrose Roast-Wolf, from the many wolves he hunted down and destroyed *in the time of Henry VII.*:" and, in our own years, a nonogenarian talked of the wolves which frequented the woods of Hylton on the Wear at the commencement of last century.

"The bones of elephants and other animals, so frequent in diluvium, have never been discovered in the vicinity of Stockton," which stands "on a bed of diluvial clay." But Durham had no lack of monsters. Its "worms," enormous serpents of amphibious habits, gave employment to the heroes of Lambton, Sockburn, and other places, if we may believe that the legends which, with all attendant evidence, scarcely reach above the medieval period, have a groundwork of truth. To explain them away, with the existence of enormous British serpents in the last geological strata, and corroborations of similar legends as to other wild animals before us, is no easy task.

* So Symeon has "Uulfeswelle, id est, *fons lupi*." A family of Wolfehill, owning lands in Blackwell, ceased about 1500.

WEAPONS AND IMPLEMENTS.

The questions whether weapons of stone and bronze were used cotemporaneously or are distinctive of date, and whether the latter were of Roman date, may derive some elucidation from discoveries between Tyne and Tees.

South of the Wear, in Weardale, beyond Park House, a "stone dagger" is said to have been found; and in the same river at Wearmouth, a hammer head of polished Scotch granite, of very beautiful form and finish, was dredged up. It is preserved in the castle of Newcastle. A piece of bone, serrated into barbs, and probably used in fishing, is in the same building, and was picked up on the shore at Whitburn. In Morden Carrs a flint weapon occurred; but, on the rising ground above Newton Ketton, (anciently Cattun,) near which the early road called Catkill runs, hundreds of objects of flint occur in company with beads of amber and jet and of white and deep blue glass. St. Cuthbert's beads or entrochi also occur profusely, but may refer to the period when the Prior of Durham had his grange in Ketton. Although Roman coins have been found here and elsewhere on the line of Catkill Lonning, not a single weapon of bronze has been found at Newton, and that the flints were split by iron implements, which have all rusted away, is improbable, for many of the former are in the shape of knives, and evidently for domestic use. A people acquainted with iron would scarcely prefer flint as a material for other than rude appliances in war, nor for small knives would flint, considering the labour of working into shape, be cheaper than metal. At Newton, probably, flint objects were manufactured, and they occur there in all conditions, from scarce a semblance of artificial form to the finished barb.

The bronze coating of one of the round bucklers of Wilson's archaic period was discovered near an earthwork beside Bremywhome (now Broomyholm), between Chester and Lanchester, and its remains are now in the castle of Newcastle. The decoration is the usual one of concentric studs with intervening ribs. On the south side of the Wear, opposite Eastgate, two bronze articles, perhaps bosses of a shield, were found, with several leaf-like spear-heads, gouges, and celts, under "some large stones casually

scattered upon the declivity of a mountain."* A single celt has occurred in Morden Carrs, and a palstave at Carlbury.

It appears pretty certain that the celts, palstaves, and leafy spearheads and swords are cotemporaneous. The celts are said to be found in Italy, a circumstance which, if true, only points to progressive periods common to all people. The character of the material composing the leaf-shaped swords, and their adaptation to thrusting only, with many other circumstances, led Wilson to fix them to an ante-Roman period. Wright considers them to be Roman. They have, however, been collected by hundreds in Scotland and Denmark, beyond Roman limits, and there is a difficulty in conceiving that imperfect objects of bronze would be preferred to arms of iron by the Romans during the empire. But, allowing their native origin, the date of these bronzes is doubtful. The Britons had weapons and chariots of iron at the Roman conquest, though they imported bronze; but in Denmark the use of iron and knot-work design is supposed to have followed the departure of the Saxons for England.

Wilson observes that the bronze swords are found with bronze rings and staples, and frequently, when in sepulchral deposits, in a broken state, snapped like the herald's wand in our own days, as if in token of "warfare accomplished and expected rest," in a "language of elevation and progress," when "the old Briton no longer deemed it indispensable to bear his arms with him to elysium." In draining Thristley Field in Laws Farm, Benfieldside, a little west of Watling Street, a stony piece of ground was reached, having every appearance of a dispersed tumulus, and under this was a bronze leaf-shaped sword, and with it two bronze rings. No bones were observed. The sword is in two pieces, but we believe that it was broken by the drainer.

STRONGHOLDS.

The Romans erected some of their finest northern fortresses between the Tees and Tyne. The sea-coast received

* See Arch. Æliana, i. 16.

its guards. Roman buildings have been found at Seaton Carew and Wearmouth, and at the mouth of the Tyne a notable station existed on Shields Law, one of the names of which was Caer Urfa. This, from its elevated and insular position, must have been of prodigious strength. But for its communication with the first station on the wall was required the station of Jarrow, which commands a view of both the other posts. The station of Chester-le-Street has lately presented evidences of its great importance, and there is an interesting fort at Stanley, near Lanchester, of about 100 yards by 60, with higher buildings in its north-east quarter. The walls are still standing, but their facing stones compose a farm house called Stanley Edge. Durham city seems to have had two or three small defenced places,* and along the Roman roads are several minor fortifications.†

Of the stations along the Deor Street, (Iter 1,) Ebchester and Piercebridge have their interest, the latter being a very large station (8¾ acres); but Binchester and Lanchester (7 acres) are the greatest remains of Roman pomp in the district. Binchester has yielded an unusual quantity of pottery; and Lanchester, where four towers decked the corners of the enclosed area, is a magnificent station, and has yielded remains consonant to its own importance.

Of these strongholds, two, Epeiakon and Vinnovion (Binchester), are mentioned by Ptolemy (about A.D. 120, scarcely 40 years after Agricola's subjugation), among his *poleis* or towns. Lanchester station, whether it or Chester-le-Street be Epeiakon, must have been in existence at a very early period, for when Gordian (who evidently did much for the place) rebuilt the *principia* and *armamentaria*, a prefect of the legion, called by that emperor's name, states that they had fallen into decay. There are indications at Lanchester of a more extensive entrenchment, on part of which the station was erected. Lanchester and Piercebridge were supplied with aqueducts, the Lanchester arrangement being of

* One of these, Maiden Castle, was a natural nab, defended at its neck. A work at Stanhope (Hutchinson, iii. 291), seems to have been similar.

† At Stainton and Barford, near the Roman road running N. E. from Barnard Castle, we have, on charter evidence, Chestres, Utremyre Chesters, Rikemandikes, and Lusewell Chesters.

a very extensive nature. No tesselated pavements have occurred in Durham.

At Jarrow, a coin of Aulus Vitellius, a memorial of the extension of the empire to either sea in Britain, and an honorary commemoration of Hadrian's adopted sons, have been found.

The legions stationed at the various forts were liable to continual changes of place, and perhaps name. We have at Lanchester a cohort of the Varduli (a people of Spain, who also occur at High Rochester in Northumberland), the 20th legion, a cohort of the Gordian legion, and a cohort of Lingones, a people of Champaigne, who are also connected with Tynemouth and High Rochester. We have moreover an imperial legate of Gordian, Cornelius Egnatius Lucilianus, at Lanchester and High Rochester; all these things proving the intimate relation between these two great stations on the 1st Iter of Antoninus.

This Iter crossed the Derwent at an unusual distance from the station of Ebchester, and Mr. Hodgson Ninde infers that Ebchester was the Derventio of the Notitia, being a station which sprang into existence after the crossing of the road received the name of Vindomora. Lanchester (anciently Langchestre) is not mentioned in the Itinerary, which was a mere calendar of posts, but seems to be the Longovicum of the Notitia; Magis, which stands next to Derventio and Longovicum being, in that case, the large station of Piercebridge, which was garrisoned by some Pacenses.

Most of the northern stations appear to have perished by fire. The effects of that element have been observed at Lanchester and Chester among the Durham stations, which seem generally to have been upheld till nearly the final flight of the eagles. Coins of Valentinian (380) have occurred at Shields Law and Lanchester. The coins of Chester range from Hadrian to Gratian.

The arts of the Romans in the north of England were of no very high order, and departed with them.* In any really valuable results of civilization the native races had

* The gems from time to time discovered in after ages were duly surrounded by inscriptions, and made to serve as the seals of medieval worthies; a head of Jupiter Tonans was styled, by the Durham convent, "The head of Saint Oswald the king."

never shared, and their youth having, after the usual policy of the Romans, been drafted into distant legions, and the foreign legions stationed here being recalled, the society that was left made no vigorous defence behind the solid Roman works. Gildas describes the people as "utterly ignorant of the practice of war," and the whole facts show that "Britain really was as described, disarmed and disheartened, and most probably so depopulated as to be incapable of any serious defence: a condition that throws a hideous light upon the nature of the Roman rule and the practices of Roman civilized life."*

The state of Durham amply endorses the conclusions of Mr. Kemble. There may have been continuous occupations of some of the chief Roman towns elsewhere, but the majority of them were soon devoted to decay.

The cessation of Roman commerce diverted the inhabitants of Britain from its seats; and, the network of military occupation broken, the confined areas of the stations lost their tenants. Durham and other tracts of country fell back into forest and waste, and when at last the German tribes "had breathed into the dead bones of heathen cultivation the breath of a new life," they allowed to the beasts and brushwood their possession of the Roman fortresses, which, all unheeded, crumbled into dust in the very sight of the Saxons, who, unbounded by walls, plotted their dwellings each with its little croft. All the stations which afterwards were inhabited seem to have received their scanty populations in connection with the ecclesiastical foundations, which for economical reasons rose within their sites, but imperial Lanchester was for ever desolate.

Consequent upon their simple habits and modes of warfare the defences of the Saxons were comparatively weak—hedges, earthworks, thin walls. The village houses generally clustered round a capacious green, and probably, as in the case of manor houses† to a recent date, were enclosed by an extended ditch on all or only the weakest sides. An earthwork extends the whole length of Dalton Percy on its

* Kemble. "They shall mingle themselves with the seed of men: but they shall not cleave one to another, even as iron is not mixed with clay."—Daniel, ii. 43.

† One of these, Wardley, has, from its moat, been mistaken for a Roman camp. So was Bellasis.

south side. Ida's fortress of Bebbanburh was at first enclosed by a hedge, and afterwards by a wall.* Durham, not a very early settlement, had its circuit of walls.† After the defeat of Malcolm's besieging Scots by Ucthred, in 969, the most handsome heads of the slain were carried by their tangled hair to Durham, and, having been washed by four women, were arrayed upon poles round the walls. The women so employed had each of them a cow for their pains.‡

There are several entrenchments between the Tyne and Tees of very uncertain date.

One of the most remarkable is "The Castles," near Wolsingham, an oblong work 278 feet by 215,§ at the foot of a high ridge of hills. The walls are 26 feet thick at their base, and are composed of an immense quantity of loose pebble stones irregularly piled up, and there was an outward ditch.‖ On Cockfield Fell are some irregular entrenchments, a plan of which, by Bailey, appears in the Antiquarian Repertory. North of them we have Toft-hill, where Cade places a camp nearly square, one of its sides being 140 yards. Cade's positions are worth inquiry into, but they must never be depended upon. A regular camp in Stanhope Park, 70 paces by 60, north of the Wear, and some irregular intrenchments on the south side of the river, have been supposed to refer to Edward III.'s transactions with the Scots in 1327, but the small size of the camp has been deemed an argument per contrà.

The Hartness district bears ample evidences of the struggles of nations. The Yoden, which distinguished itself from South Yoden, and, from the north side of Eden Dene, overlooked Hartness, has dwindled to a farm house or two. But the site of its village perhaps exists in a field about half way in a line between Horden Hall and Eden Hall. The field is full of ruins, within, as it appears, a bounding trench, and on their north side is a large cone, doubly or trebly trenched in a semicircular manner, from the top of which a commanding and beautiful view of the sea coast is

* Ang.-Saxon Chron.

† The recent excavations for sewers shewed that the carriage way of the Baileys surmounts a vast accumulation of refuse, including the bones of boars, stags, horses, and the domestic animals. The bones of the extinct elk occurred. The same appearances were reached at the outside of the city wall at Claypath Gates, and in both cases suggested the existence of moats filled up with débris.

‡ Symeon de obsessione Dunelm.

§ Inf. W. R. Bell, Esq.

‖ See Hutchinson's Durham, iii. 310.

acquired. At Eden Hall itself, south of the house, is a circular mound. At the east end of Elwick is a commanding mound, said to have borne a mill, but evidently of much greater magnitude than such an erection required. An excavation in it commands a fine view to the south-west. Throston and Low Throston possess ruins singularly extensive. At the latter place some of the sunken areas are circular, with large stones set round them at intervals, and there are contrivances in connection with the water of the carr or marsh adjoining. At Tunstall we have two remarkable entrenchments in no elevated position, fronting each other, and divided by a marshy rivulet.* The enclosure nearest the sea is of great strength and of several angles.† That nearer Tunstall is oblong, running down a slope, and seems to have had lesser works attached to it on one side, a mode of defence which occurs also at Salkesdun (Shackleton) near Heighington, and is said to be peculiar to the Danes. Heorterness or Hartness, as we have already seen, was a district of the wapentake of Sadberge, and its natural boundaries, Castle Eden Dene and Billingham Bottoms (morasses), are of surprising strength for defence. Hence, about 900, it became by these bounds the petty domain of Scula, a soldier of Reingwald, the foreign pagan who reigned at York.

Perhaps the ridicule thrown upon Cade's "large cavity on the summit of" Nabhill at Mainsforth, "at his day called Danes-Hole," is undeserved. The name might easily perish before Surtees wrote. Hutchinson, who exposed many of Cade's absurdities, does not deny the existence of this Danes-Hole; and we find that the name is applied to several hiding places in the palatinate. However mistaken may be the popular application of almost every ancient work to the troublous times of warfare between the Danes and Saxons, the very fact of such an appellation proves what an ineffaceable impression the horrors of the period made. The name of the Danes-Holes may really have had its origin in their use for retreat from the Scandinavians. They are frequent in Hartness,

* They have much the appearance of having been temporary defences for two contending races. And yet some ancient roads seem to point to these works, and they may be mere defences for cattle or houses.

† Can this be the real Tunstall, the stall or seat of a defenced town?

where the struggle seems to have been most bitter, and are described as excavations in the sides of eminences, in those sides from which the most extended views might be obtained.* Wilson notices a precisely similar description of earthworks in Scotland, assigned by the natives to the purpose of sheltering men and cattle when surprised by invaders. Other natural features afforded safety. The Fairy Coves at Hartlepool, the very mythological name of which bears witness of their antiquity, are artificial circular excavations of about five feet in diameter, and about twelve feet above the shore. They communicate with each other in rocks predisposed to present such features. A little to the south of them the name of Maiden Bower, applied to a yawning space between a singular detached rock and the mainland, may have arisen in some of the usual causes which attach both words to ancient remains. Between the Fairy Coves and Maiden Bower is the entrance of the Gun Cove, so called from a battery placed over it. This long cove communicated, according to tradition, with the church, a common idea, which in like manner connects Durham with Finchale Abbey, Raby Castle with Staindrop Church, Darlington Manor-house with Darlington Church, and Hylton Castle with Shields and Sunderland! A "sleeve of mail armour" is said to have been found in Hetherburn Cave, near Stanhope, which extends nearly a mile from its opening.

TRANSIT.

We have delineated on the map various lines of road in greater or less strength, according to the evidence of their early existence.†

The blacker roads are concluded to be Roman. One of these was Deor Strete,‡ a road of mark and boundary in Saxon times, and since considered worthy to be added to the achievements of those sons of Watla who must have carried their viatory tastes to the starry realms; the Milky

* Inf. Mr. Oswald Oliver, of Elwick. We have noticed a similar feature in a natural conical hill near Tinkler Row.

† The fainter lines, and the following notices of them, are rather hints for observation than grave propositions.

‡ Symeon. A *street* is often a Roman road, but not necessarily so Yet in old records it probably always designates a paved road.

Way being called Watlinge Strete.* This derivation of Florence of Worcester for the southern Watling Street is consonant with its early form of Weatl*inga* Streate and with the Saxon customs of deriving local names from individuals and ascribing stupendous ancient works to their own mythic heroes. On the eastern line of this road in Northumberland, now called "the Devil's Causeway" or Watling Street, the Saxon name of Deer Street (Forest Road?) occurs at least as late as 1716.† Leland, we believe, never calls the Durham portion Watling Street, but applies that name to the Yorkshire branch from Gatherly Moor to Greta, whence it was "a very excedinge poore thorowghe fare" to Bowes and Carlisle. In later times we have Watling Street,‡ Broadway, Mitchel Scot's Causeway,§ High Street, the Street, the Coal-loaning, and the Coal-way.‖ Michael Scot, the magician, is probably commemorated also in Scot's Corner near Catterick and Scot's Dike in Northumberland; but we will not affirm his connection with the Scot's Road near Lanchester or the Scotch Dyke, a boundary in 1762 between the parish of St. Oswald and the chapelry of Ash on Ushaw Moor.¶ His improvements of land transit were of a more practical order than his intentions for raising the shipping interest. He would have brought the tide to Morpeth and Durham, but in each case the roar of waters frightened the agents, who were to run up the stream without looking behind, and the tide would follow.

And it was a right gallant way through the forest, that ancient street with its broad crest and strange and graceful curves, to reach that gazebo and this meeting of the valleys! A ridge, two yards in height, full eight yards broad, all paved with stone,** hard at this day, the great original ridge not worn out through so many ages, albeit

* Chaucer's House of Fame.

† Syke's Local Records, sub anno.

‡ Stukeley.

§ Horsley.

‖ Copy Survey, in 1614, of the Nevil estates, poss. R. H. Allan, Esq. Cold and coal are sometimes confused, and both words are generally considered to have had their present significations. The former word, however, often occurs in a manner suggesting that it has the same reference to ancient remains as it has in the Cold Harbours of other parts of England. We dare not say that the places called Cold Knuckles, or Cold Knockles, have affinity to Dr. Wilson's Knoclegoil, Knoc-kill-goill, the hill of the cell or grave of strangers. Tradition states that Cold Knuckles, near Stranton, alludes to a stingy fellow turning a beggar away on a cold day and causing his death.

¶ Act for enclosure.

** Hutch. sub Ebchester.

broken and in great need of reparation; several milestones by the way,* three distinct parts, a centre road, with a narrow road on each side for foot passengers; four ditches!† All this did the antiquarians see and say in the last century. Would that Mr. MacLauchlan could have made his excellent survey in their days!

Likewise the branches of Deor Street were of becoming state. That going off towards Weardale, between Ebchester and Lanchester, still retains the "three distinct parts," and in one place seems to have had two of the smaller ridges on the side.‡ It is well developed in crossing the Shotley Bridge and Durham road.

The next branch or crossing line is the well-known Wrekendike, which has employed the pen of Hodgson in the Archæologia Æliana, and is supposed to join or cross the Watling Street at Lanchester. It runs from the station of Shields Law§ to the south-east corner of Jarrow Slake, but modern observations do not bear out the route which Horsley made to cross the marsh (which, as before stated, was formerly an arm of the sea, and along which, until a late period, the tide occasionally flowed), and to pass east of Laygate House to the Barnes; this was an almost if not quite impassable course. In making some new streets near Laygate House upon it no remains of any causeway were found, although the locality was not likely to have been disturbed. But to the west of Laygate House there is an old path, now built along, called Rekendyke Lane (which surely must have been on or parallel to the line), leading from the Barness to a passage over the Milldam close to the Tyne, where by a drawbridge, or some such contrivance, on the site of Cookson's works, all the traffic between the "Over-Dammers" and "Under-Dammers" was carried on. The only accesses to Shields over the Milldam and its dreary swamps were by this bridge and the direct line occupied by the Westoe road. By keeping to the clay elevation, separating the sand island north of the Milldam from the Tyne, the Romans would arrive at the general course of an ancient road now called the "military road," north-west of the

* Stukeley.

† Hutchinson.

‡ The commencement of this road is noted by Mr. MacLauchlan as traces of entrenchments. From Bunker's Hill it proceeds direct for Berry Edge.

§ For which see Bruce's Roman Wall. 2nd edit. 293.

station, and, protected by the station and the river, enter the former by its north-west portal, and thus by a high street above the present "Low Street," give colour to the last appellation. Horsley confesses that his marshy way was "very obscure and uncertain." From Jarrow Slake to near Fellgate the road is traceable, but dim. At a field or two before Fellgate it becomes boldly developed, and so continues to its crossing the Roman road from Pons Ælii to Chester-le-Street, near High Eighton. For some distance the present road is actually "on Wreckendyke," as a lease of 1775 expresses it, and there the ridge is very bold and almost dangerously high. In 1262 it is called Wrakyndik, and, about a century before, "the marches of Wrackenndberge" were a boundary. The road passes the Leam Farm, and is generally known as Leam or Leeming Lane.* Sometimes it is Brakindike,† and in Gateshead there was a family called Birkydike or Brikydike. Near Whitehouse‡ a quarry exhibits the pavement of the ridge at each end.§ The Wrekendyke forms the south boundary of the parish of Gateshead, and in 1595 is described as "a broade high Dyke called Wracken Dyke."‖ Its pavement was discovered in building the new engine-house in a field from High Eighton.¶ We have not seen its traces further, but the observations of older antiquaries, and the nature of the ground and names of places, have made its western route tolerably certain. The people at Eighton have a notion that the Wrekendike ran from Jarrow to Stanhope.**

The Roman road which enters Durham at the Stretford of Symeon, near Barnard Castle, crosses the Watling Street a little south of the Gaunless.†† There appears to be a most

* The convent of Durham held lands on it in the 12th century, as, "vastum nostrum de *Lem*."

† Broom and Breckon have botanical meanings, but seem frequently to point to early remains. Thus the Wrekendike, by the constant conversion of B, F, V, and W, becomes Brakendike. Broom is probably the *Brem* in Bremenium, Bremetenracum, &c.; or the Saxon, Brem or Brym, famous. Bremywhome, the seat of early works, is now Broomyholme. In composition with hill and law, *broom* may be pleonastic, an euphonious alteration of the British Bryn, a hill.

‡ "Pro cariagio 9 barells allecum alborum a le Wraykendyk juxta le Whithoushe usque monasterium, 6*s*."—Durham Household book, 1530-1.

§ Personal inspection.

‖ "The bounders of Gatesyde Moores."

¶ W. Barkus, Sen., Esq., Low Fell.

** Bp. Gibson, in his Camden, joins the Wrecansdike to a road he draws from Lanchester by Wolsingham to cross the Tees at Eggleston.

†† This road, locally known as the "Roman Causey," is described by Mr. Denham as "crossing the Staindrop and Barnard Castle turnpike a little to the east of Broomy-Law Lane, a 'green lane,' mapped down by both Greenwood and

direct and commanding road from Auckland to the heights of Merrington and Ferry Hill, and thence by the paved road to Thurstanton (Thrislington) and Garmondsway. As to the dyke found by Mr. MacLauchlan to run from Binchester in a north-east direction, a Roman monumental slab existed on the road between Binchester and Byers Green in 1819.* Gordon shows a Roman road proceeding in line with this dyke, a little to the east of Sunderland Bridge, where Cade could see a Danish camp and Hutchinson could not, thence east of Low Butterby, in the field adjoining which place "many stone coffins and *holy water jars*" have been dug up, towards *Leamside*, a farm house which lies close to a railway station of the same name. From Leamside the route proceeds west of Houghton-le-Spring past Painshaw Hill, where there is tradition of a great battle, to Offerton, beyond which it crossed the Wear at Ford (in 1457, Le Forth), and went straight to Shields. This line courts investigation. On the hill above Houghton a Roman coin was found,† and south of the same village, at Court or Kirk Lee, are some entrenchments; the principal one, an oblong square, has been cut through in various directions, without discovering anything of importance.‡ The road from Durham to Sunderland should also be examined.

A road from near Willington to beyond Brancepeth is accurately described by Mr. MacLauchlan. Further it was traced by Dr. Hunter to Harebarrowes (1380), Harbrass, or Harbour-house,§ and is next described by him as tending past Lumley Castle in a direct line towards the station

Hobson, into the lands of Philip Longstaff on the south, and William Peverell on the north. From hence it runs in an oblique course through Streatlam Park, and enters the Wood End Farm about 200 yards south of the farmstead, and crosses the brook about midway between Wood End and Hunger Knoll into a tillage field belonging to the latter farm. It then goes in a zig-zaging manner [?] to the north through a field in the Scaife House farm, belonging to his grace the Duke of Cleveland, called Emanuel Close, and then makes its ingress to Raby Park, and runs to the west of the pile of Raby. It is, I have been told by farmers who have uprooted many roods of the road, between four and five yards in width, paved with a sort of large water-worn sandstone. Old Mr. Longstaff, who died a few years ago, used to tell how that the whole line of the above road was made in a day." Mr. MacLauchlan reports it as a stone causeway about four feet wide, about 200 yards south of the Deanery farm house, St. Andrew's, Auckland, and as a bridle-way from Fielding Bridge to South Auckland, not being traceable further than the Darlington road.

* Arch. Æl.

† Life of Surtees.

‡ Surtees.

§ See Hutch. Dur. ii. 486.

at South Shields, passing about a mile east of that at Chester-in-the-Street, without any signs of communication therewith. Warburton, with great probability, draws a road from Rykenelden (1378), now Rickelton, to Jarrow, and the name of Lambton seems to refer to one of these lines. There was a very ancient passage and chapel at Brugeford, now New Bridge. There is also a ford at Painshaw Staiths, on the north side of which is the Worm Hill, a natural cone of earth and gravel, round which the Worm of Lambton loved to twine. We have examined the country about Lumley and Rickelton without success, but look upon Lumley as having probably been a fort in conjunction with Chester, and a sufficient reason for carrying a road on that side of the river. The Rycknild Street of old authors ended at Tynemouth.

Doubtless a good communication between Lanchester and Chester existed. Mr. Hodgson mentions a paved road as passing from the station, through the churchyard, to a quarry a mile east of Lanchester, whence the station stone was procured. Beyond this some remains of the old Ridgeway existed in 1808. At Holmside Hall is a Roman figure built into the chapel, and beside Tribley and Broomyholm is an earthwork, and here, as before mentioned, the fragment of a Romano-British shield was found. The road probably continued to Wearmouth, and along it would be brought the Fulwell stone which occurs at Lanchester. A fishery under *Brugh Knoll*, in the Est Wode of Hilton, from a place called *Lambeden*, as far as the ford of Pavylyon, occurs in 1448.

As to the road from Chester-le-Street to Pons Ælii, the Rev. W. Featherstonhaugh has seen Roman stones at Picktree, a place haunted by a mischievous *Brag*, a spirit of the Puck genus. The ridge of the Roman way is still boldly developed where hedges cross it near Eighton; and in the field south of its intersection of the Wrekendyke, between the old turnpike road and High Eighton, its pavement, firmly embedded, was hacked up with great difficulty a few years ago.

This fact is of considerable importance, as an ancient paved road from Newcastle to Usworth, having neither the commanding situation nor other appearances of a Roman road, forms the eastern boundary of the parish of Gates-

head, and in the Heworth Common Act is termed "The Great Roman Way." It is also called "Fell Dike," but the boundary dike itself is now supplanted by hedges and walls.*

Stukeley saw "several Roman stones at Gateshead,† the recipient parts of their hand-mills." In 1802, some early brickwork and horns, sawn into lengths of about six inches, were found a door or two above Mr. Garbutt's, in Bottle Bank; and, lower down the hill, a stone mortar, two corresponding querns, and a solid wall were discovered. No evidence defines the date of these remains, or that of some irregular intrenchments in the Camp Field on Gateshead Low Fell, which is north-west of the old engine, in the enclosures of which querns were also turned up. In forming Church Street in Gateshead, in 1790, a large earthen vessel, full of Roman coins (several of them of Hadrian), were found. That the Roman bridge across the Tyne to the station of Pons Ælii was on the site of the present one was proved by the coins found in the masonry of its piers on the destruction of old Tyne Bridge.

This Roman bridge must, however, have fallen into ruinous decay; for, when William I. returned with his army from Scotland, "about the place which now is called the New Castle (Novum Castellum), but which formerly was termed Moneceastre, he fixed his tents upon the river Tyne. It happened at the time that the river was swollen to that degree that at no point could it be forded, the passage not lying open by the assistance of the bridge that now is seen. The Normans, accustomed to rapine, seized sustenance for themselves and beasts from the circumjacent places. But because the poverty of the place sufficed not for such a multitude, and they hearing that the substance of the whole province was deposited at Tynemudham, they hastened thither for food," and for a miracle. A similar occurrence took place in the next reign to Nigel de Albini. From the nar-

* The medieval paved road from Durham to Gateshead rounded the projecting high ground of Gateshead Fell, and passed between the old and new turnpike roads. It was called the Black, Mirk, or Dark Road or Lane, and enters Gateshead by West Street, which in early charters is invariably termed "the High Street or way behind the gardens [attached to the burgages of the Fore or main street] leading to Durham."

† *Heved* (heued), *head*, *ide*, and *ett*, after *s*, are convertible, but are apparently of varied meaning. Gatesheved or Gateside is the *capræ caput* of Bede, but the Side (now Bridge Street) in the same town wound up the side of a hill like the Side in Newcastle. Simonside was Symondsett; Conside, Conkeshevede, &c.

ration, it appears that the place ("New Castle, which is situate on the Tyne"), with the surrounding country, was rarely cultivated, and consequently was stinted in produce, and that much of what it had was, for the purpose of cheating such military feeders, deposited at Tynemudham, in the keeping of St. Oswin.* The writer brings down his history to the reign of Stephen, and we thus have limits to the existence of the Tyne Bridge, for which the falling piers of its Roman predecessor seem to have been cobbled up.

A road, connected probably with that running from Chester to Tyne Bridge, approaches the Tees from Streetfield, How-hill and County-flat or Countess-close, to the site of an old bridge called Pons Teyse, Pons de Pountays, Pontesbrigg, Pons Tesie, and Pountese. Near it is a ford called Countesworth (1594) or County-ford. The bridge was formed of stones strongly cramped with iron, and was accompanied by a hermitage, chapel, mill, and earthworks on each side of the river. A large mound on the Durham side, called Tower Hill, is probably the *Castellarium* of early charters.

The road proceeds north, under the name of County Lane, by Middleton-on-the-Raw (now "One Row"), and Street House to Sadberge. It was a boundary of parishes in 1594, and its ancient pavement is said to be perfect in many places. Sadberge, the old capital of an important wapentake, stands on an eminence commanding beautiful and extensive views; and it is not wonderful that traces of deep trenches should exist round the base of its highest position. The road proceeds to Stainton-in-the-Street, but between the two places an offshoot occurs, which goes far to prove the Roman use of this line.

This is an exceedingly ancient deep and miry road, called Cat-kill Lonning, proceeding by some closes called Catholes and Cattkells,† to the vills called Cattun (1082), now Ketton. This road was also named Broom Lonning‡ and Coal Street,§ and was formerly much used by waggons and carts in conveying lime and coals to the farms further south and to many parts of Cleveland. The name of Cat-kill seems

* Vita Oswini. Sur. Soc.
† Chaytor Archives, anno 1670.
‡ Inf. Mr. John Ord.
§ Chaytor Archives, anno 1670.

to be confined to that portion of the track which lies between Patie's nook (the meeting of four lanes north of Sadberge), to where it is intersected by an old road from Sedgefield to Darlington (*Darnton Trod*). The appellation *Cat* has the appearance of marking British occupation; and the compound Cat-kells or Cat-kill of causing, rather than resulting from, an idea which makes the lane an annual rendezvous of all the neighbouring cats, for the purpose of slaughter—cat-kill-cat—a notion probably arising from some fight of the sort described in Bewick's notice of the feline tribe. The numerous flint articles found at Newton Ketton have already been noticed. A coin of Severus has occurred there also.* Passing Rickenhall, we have a haunted Catlowden close and pond, somewhat west of Midridge and north of the present road; and due north of them, at Eldon, another Roman coin was found. The line, therefore, seems to have run from Sadberge to Auckland and Binchester.

To return to Stainton-in-the-Street, we saw a field on the west side of this village full of rectangular remains. It is called Hawksley Garth.† Further north are similar features in the fields to the east of the church. An old man supposed them to mark the sites of dwellings, and they may be the last relics of the Saxon village, for the church is considerably to the north-west of the present houses. In its north wall are built up two portions of a Saxon cross. The building stands on a squarish platform, from the north-east corner of which an enclosing work runs and makes a right angle to a crossing of roads at the north of the village called Cross Hill. The hill itself is a large cone north-east of the crossing. Here, and to a point where a magnificent view is obtained on all sides save the south-west, the ancient line of road probably is to the east of the present road which bounds Preston-le-Skerne from Elstob for some distance farther, commanding fine views. Leaving the branch lane to Elstob on the east, there are two remarkable cones, the eastern one bearing the ordnance pole. The old line then seems to verge north-west to the ness of high ground south of Mordon, securing most extensive views to

* Inf. Mr. Jno. Ord.

† A family of *Rickaby* owned half the manor, and leased from the Chapter a messuage called *Ricknowle*, Hawkesley Shepeclose, &c.—*Surtees*, iii. 66.

the north-west over the great morasses of the Skerne; and then to turn to the north-east in the direction of an old boundary road to the remarkable eminence of Sedgefield.* Our informant at Stainton spoke with some pride of that place being "in the street," which he had heard was "the high road," and went to Sedgefield. There are physical difficulties which render Mr. Cade's line, through marshes by Bradbury, and some imaginary tumuli near Nunstainton, to Mainsforth, quite untenable. The property granted at an early date by the convent to their almoner, in Bradbury at *Catlawe*, Munknowl, Wineneleche, the Braches, Brademere, and Redeways, an oxgang betwixt the road leading to Bradbury and *the infirmary standing near the road leading to Sadberge*, two acres near the road to Sedgefield, near Standande Stone, and the land above Renesden called Braks, upwards by the runner as far as the moor, and on the other side downwards to Hardwick mill-race—all these lands seem situate in the eastern part of the township, and near the road we have indicated. There was, however, in medieval times, a road of great consequence from Ferry-hill, by a forced track across the marsh at Mainsforth,† to the episcopal residence of Middleham.

A turnpike road, proceeding north-west from Sedgefield along a ledge of high ground by Houlforth and Camp House to College Hill, is a boundary of townships for four or five miles, and possesses a good command of the west. At College Hill, which is the extremity of Garmondsway Moor, a splendid view to Sedgefield and the west is obtained. At about a mile to the west is Stobcross, the locality of some remarkable early burials to be noticed afterwards. The road now makes an angle, but the boundary runs straight and falls into the route again. Close to it on the west is Simonsides, also the name of an extinct township on the Wrekendike. The Simon of mythology was, it seems, a domestic brewer to King Arthur,‡ identical with the German Sigmund, and very fond of killing dragons.

* The view extends to Garmonsway heights to the north, to Brusselton Tower on the Watling Street on the west, and to Merrington on the north-west.—*Surtees*, iii. 35.

† *Forth*, *worth*, and *ford* appear to be convertible, and to have the varied significations of the Lancashire rode; a narrow *road* over land or water (the form *wath* does not apply to Durham), or a broad farm cleared from the thicket, an assart.

‡ Athenæum, June, 1850, p. 637.

Cnut, in proceeding to Durham, came with naked feet "from the place which is called *Via Garmundi;* that is, for five [in modern measurement about seven] miles."* But whether he came to Garmondsway by the road we have been tracing may be doubtful, for an ancient line from Teesmouth is in line at this place. The two courses probably parted again at Shincliffe into two lines—one in the same general course with the road from Sadberge, the other with that from the Tees. The former would lead by Old Durham and cross the Wear at Kepier. The grounds of Old Durham are divided by something like a double moat from a square platform overhanging a brook. The platform is apparently natural and the moats proceed from original streams, but seemingly are altered by art. Cade conceived the square to be a Roman camp, coins having "been formerly ploughed up here, and lately some of the lower empire also discovered within its vicinage."† Old Durham stands upon a terrace, seemingly the river bank, and beyond it is a wooded hill called Pelaw. The line would strike for Chambre's "place, called Maid Arbor," from which a beautiful marble cross was removed to the city market. It was afterwards used as an enclosure for the milking of the Gilesgate-moor cows, and items for "mending the mayden castell dicke," for "drissinge the maiden bower," for "mendinge the mayden castell which was broken down by milkers of kye," occur in the parish books. It was a square platform at the angle of the Sunderland and Sherburn roads, just outside the Gilesgate toll-bar, and is now a woodyard. A friend of Cade had "carefully surveyed the old road" from Old Durham "by Kepyer Hospital, and assured him that in a dry season the piers of a bridge were obvious in the bed of the river, seemingly of Roman construction." In the dry summer of 1827 solid masonry was discovered on the north side of the Wear below Kepier Hospital, "the piers of a bridge," says Surtees. Mr. Raine however hints the possibility of the masonry being in the nature of a quay. Hence Cade takes the road by Newton Hall,‡ a straight

* Sym. Hist. Dun. The old Saxon and medieval measurements are longer than ours. Kemble makes the Saxon yard to be 39·6 inches.

† A fine gold Nero was found by a woman hoeing turnips on Gilligate Moor about fourteen years ago, and is in the possession of the Rev. James Raine.

‡ There were Newton, *Old*newton, and Kyowlawe.

course enough, whatever become of his "exploratory castrum" there. By Black Dean * it would reach Chester-le-Street.

Returning to Shincliffe, we must trace the north-west line across the Wear. Another Maiden Castle mentioned in the strongholds is a hill of peculiar form, rising into a precipitous ness, and overhangs the river opposite to Cade's camp. Its south-eastern side is scored with little gills or depressions. "A few years ago, in removing a portion of the earthen rampart, several squared stones were found, and one which could scarcely be taken for anything else than a rude and defaced Roman altar."† There does not appear any exact evidence of a bridge here, the wood discovered in 1827 having perhaps been connected with the extinct Scaltock Mill, which stood a little below the ford. "Long trunks of trees were squared and bored and mortised together, so as to form a strong foundation on each side of the river."‡ The flat ground to the east, and the necessity of a preliminary crossing over the Pidding beck, render the existence of a passage here doubtful.

The bridge of Scyneclive has no commencement in history. The traveller, on passing it from the south, had two modes of reaching Durham. One ran between Maiden Castle and the river by a causeway which may still be traced. Joining the road from the ford, the early Raton Rawe and Water Lane lead to another ancient ford. This seems once to have had a bridge called *Cat*brigg,§ and crossed to Kingsgate, by which William the Conqueror gladly escaped from St. Cuthbert's shrine. When Catbrigg finally fell into disuse, Old Elvet was the track. So, in 1633, "a way was made for King Charles to come in at Elvet head." Some pavement, far below the present surface, was found in Elvet lately, as if descending to a ford. Elvet Bridge was first built in the 12th century.

When the route by Maiden Castle foot was impassable, the present steep *Peth* was used. The name, the small angle formed to the main line, and the advantages of

* On entering the Harberhouse Estate from the old road the view commands Lumley Castle, Chester, and a hundred villages and farmholds as far as the distant range of the north-west hills.—*Surtees.*

† Surtees. Mr. Raine endorses the statement.

‡ Surtees.

§ See Surtees, iv. ii. 162.

ground, induce a belief that the Romans crossed, not at Maiden Castle ford, but by Shincliffe Bridge. To this road the only entrance to the fort pointed. The Peth comes to the end of Hallgarth Street, on an elevation, and there is "a lofty hill of a conical figure, called Montjoye, rising from the plain."* Pursuing the street, Catbrigg is reached.

The name *Dunhelm*, the fortress hill, renders an early settlement on the unequalled site of Durham highly probable. In the Minsteryard, Stukeley saw a Roman altar set for a gravestone. Dr. Hunter showed him a Roman head in a garden wall, apparently a portrait of Marcus Aurelius; and the head of St. Oswald on the conventual seal was really that of Jupiter Tonans, and an antique gem.

A curious Saxon poem on the wild features of Dunelm may be seen subjoined to the history of St. Cuthbert in Twysden.†

The road will perhaps be found to identify itself with a paved road which crossed Stanley Burn in the direction of the Stanley camp. In the Middles farm a prodigious number of cartloads of stones have been removed from it, but sufficient remained at our visit to point towards Sacriston Heugh, and convince us of a Roman origin. The northern destination of the road seems to be identical with that of a way from Chester-le-Street always considered to be Roman, and pointing to the various ancient remains in the parish of Ryton ‡ and Ovingham ford in Northumberland.

* Hutchinson.

† Twysden's Scriptores. Some names may throw light on the early occupation of, and access to, the city. Near Neville's Cross is a close called Codeslaw. To the north of the Redhills, and in the depth of the valley near Shaw-wood, is the little mound or hillock called the Maiden's Bower, where the monks elevated St. Cuthbert's corporax cloth during the fight of Neville's Cross. "The fair cross of wood, a little distant from a piece of ground called the Flasse, above a close hard by the North Chilton Pool, on the north side of the hedge where the Mayd Bower used to be," was defaced in 1569.—*Davies.* These places are west of the cathedral and of the Wear (that river bounding the cathedral peninsula both on the east and west). The road to Newcastle, from Framwellgate bridge, climbs a hill. The steepest part of the ascent beyond the houses is called the Peth, which runs from Framwellgate north-west, as does Sidegate north-east. The land north of these two roads was called the land of Sidegate, and in 1217 began "at Tulve Cross, and thence by the highway leading to Newcastle near Hedele Cross, and so to the *Maiden-well*, and thence turning towards Akerside near Fernleyburn, and thence to Full-bridge, and thence to the water of Wear," &c.

‡ "A greate round hill like a wyndemylne hill,—a pece of grounde caste aboute with a greate olde diche, by some called the Arbour—thence eastwarde dyreclye over the old holowe waye eynde up to the toppe or highte of the more or hill there, and from thence dyrectlye to the diches of Kyefielde."—*Ryton and Chopwell Boundaries*, 1563. *Surtees*, ii. 281.

Down the Tees, and round the coast, relics of the Romans are found in some numbers. On the Tees at Coniscliffe, according to Stukeley (Gough's Camden queries Oumby or Ulnaby), was found the inscription commemorating one Condatus, and at Snowhall Roman mortar, perhaps from Piersebridge station, has turned up. Various other places where Roman coins, &c., have occurred are marked in the map. Eventually, perhaps, it may be found that a Roman road passed along the coast. Between Shotton and Easington to the left of the road is a most commanding gazebo, a cone having on its summit a mound, which was in modern times levelled in some degree for the reception of a summer-house which has disappeared. There is a road-like ridge pointing from this mound to the east side of Shotton. Easington church stands high upon a platform, natural, but possibly aided by man.

The word *Cat* appearing to lead to remarkable thoroughfares, and a Catcoat occurring near Stranton and a Catlaw Hall, or Cattley House,* near Sheraton, inquiries were instituted, and another old track ascertained.† It seems to commence at the strongholds near Tunstall and Catcoat, already noticed, and, passing by "Thrums Law," at "Worsett" (*qu.* Forth's Head?) takes in another road from Naisbury, and in passing to Throston Moor has the appearance of being ridged, or furnished with a foss on one side at least. It proceeds from hence a little north of Catlaw Hall, Hartbushes, and *Green Hill*, a conical mound, perhaps natural. The continuation will likely be the ancient road from Thornley to Durham. Branches of this track may be traced. In Hill Top Farm, just north of Sheraton, are Catlaw Barn and Catlaw Howl, the latter a hollow wood with an old road. Lawshill is on the same farm. These names may have some connection with the Salters' Track. The term "Salters' Track" is applied to a chain of old roads running south from Wearmouth in various directions, of indefinite antiquity, and probably to be traced round the whole island. One of the branches points to the site of salt works in Tees bay at Greatham.‡ There are several

* So in 1602.

† Mr. Oswald Oliver, of Elwick, obligingly traversed the ground for the purpose, and we have since seen much of it in his company.

‡ The Salt-cotes were washed away, but some of the farmers still pay salt-rents to Greatham Hospital.—*Surtees.*

irregular motes and breast earthworks on Seaton Moor towards the Snook, and in Cowpen Marsh are large mounds covered with herbage. The general courses of such of these roads as are mapped approximate, it is conceived, to accuracy; but attention having but recently been given to them, they are few, and more or less verging from precision.

Speaking of them in the gross, they are of sufficient antiquity * to be boundaries for long distances; they approximate remarkable names, and present curious features. When not paved they are exceedingly deep. The track between Elwick † and Dalton Piercy is about ten feet deep, near the latter place the uniform width at the bottom nearly six feet. Their pavement is for horse-traffic only. The causeway of Lingfield Lane, near Haughton-le-Skerne, shifted at right angles from hedge to hedge, the lane itself being of considerable width. When it reaches Haughton Bridge‡ we find the tradition of a great battle, and in passing through a portion of the churchyard, which was excavated for gravel, skeletons continually tumbled in, and were considered to be of enormous size and associated with the struggle. The pavement was found in 1814, at the depth of eighteen inches below the soil. It joins the causeway from Darlington ("Darnton Trod"), which runs in a north-

* The monks of Durham seem to have been returning to Chester by the rather circuitous route of Salters' Track, when the body of their patron saint became immovable, and compelled its bearers to proceed to Durham—its final resting-place. The occurrence took place "near Durham, on the east side, at a place which is called Wrdelau—in the mid field"—*medio in campo*, the thick of the townfield, that wild common or fell formerly the march of every vill. Therefore the place was uninhabitable. The "former place" to which the monks were returning was certainly Chester; the early chronicler of Whitby and Richard of Hexham are precise on that point, and therefore Wrdelau was not Wardley near Jarrow. Leland, whose guesses were often very erroneous and not intended for publication, says, "Nunc Wardele, ubi ædes olim monachis recreandi gratia concessæ." Wardley, although a moated house of the Prior, was not granted by name or for a specific purpose, it is not on the east of Durham or near it, it is not a hill or law, and it is Wardel*ay* in Graystanes. Mountjoye near Durham, where Hutchinson with great probability placed Wrdelau, is mentioned *eo nomine* too near Symeon's time to be admissible, though otherwise fulfilling the various statements of the chroniclers better than any other place. The old local identification with Warden Law, a large conical eminence on Salters' Track, is after all doubtless correct, for in a deed of the late date of 1663 the name is written *Wardell Law*, the exact word of Simeon. A Law is a hill, boldly conical, natural or artificial, large or small.

† This road leaves the town street of Elwick at right angles and is there called the *chare*, a name applied at Newcastle to the narrow passages branching from streets, which elsewhere occur as *vennels* or *weinds*.

‡ There is a tumulus on the river side a little to the east, but it seems connected with some entrenchments of the medieval grange of Little Haughton.

east direction. This latter, before it arrives at Ketton Bridge, proceeds over the morasses of the Skerne, by means of flags laid on small arches for some distance. Some of these roads proceed apparently to an ancient ferry over the Tees, which existed at or below Haverton Hill, and was furnished with steps.*

ROMAN COMMERCE.

Scattered over Eggleston Moor have been found lead workings, tools and unknown implements, with basins of stonework for smelting. So, through a wide district in the north-west part of Durham, are frequent heaps of scoria and "delves" or pits—relics of old iron workings. But the silver in lead and the "iron of Weardale" were of great importance in medieval times, and may sufficiently explain these remains.

Considering the later importance of the grindstones of Gateshead, known as "Newcastle grindstones," and the fact that querns have occurred at Gateshead itself, and at some mounds at Gateshead Low Fell, it might be well to notice the material of the northern querns generally. It will, however, perhaps be found that they are not of local stone. Hodgson states that the upper stone of the Lanchester quern is very porous freestone, the under one generally of petrosilicious lava, not found in Britain but still used in corn mills. The same author noticed, at Lanchester, stone such as that from Fulwell or Marsden, which he considered would be brought along the Wrekendike.

Corn, it is believed, "was one of the principal exports from the eastern shores of Britain in the Roman age; considerable quantities of it were shipped for the garrisons on the Rhine:† and extensive tracts of land upon our commons, which, before their enclosure, were marked with ridges and furrows, showed how extensively the Romans had ploughed the country before it was portioned out by their

* Mr. Oliver was told this at Bellasis. The Melsonby Book agrees, bounding Belasyse common on the east, "by the way which is now called Ferrygate."

† Ammian. Marcel. lviii. c. 2, ed. Bip. i. 60.

Saxon followers."* The same appearances are not uncommon in the wall district of Northumberland. Camden's "panegyrist in the time of Constantine" delights in Britain having "such abundant plenty of corn, as might suffice both for bread and *wine*." "So that, not without cause, it was accounted one of the fairest and most glorious plumes in the triumphant diadem of the Roman empire while it was a province under the same; and was truly called, by Charles the Great, 'The store-house and granary of the whole western world.'"† The Saxons lacked the commercial connections of the Roman settlers, and the arable land became pasture or waste.

SEPULTURE.

We have the usual notions of giants‡ and bloody battles, grounded for the most part on discoveries of bones, which, having become loosened, lead to erroneous ideas as to the stature of the heroes they represent. Occasionally we obtain evidences of the period in which the supposed giants existed. In 1759, a "gigantic skeleton and two Roman coins" were found at Fulwell limekilns, protected by four large stones. Two years before, Martin's General Magazine reports the discovery of "three small and very ancient Saxon coins" [stycas?] on Gateshead Moor, near "a skeleton, the bones of which lay compactly together and measured seven feet eight inches high, at seven feet depth from the surface, in a bed of stiff clay." The burial trenches at Bludderburn dene, near Ebchester, may be referred perhaps to the Roman occupation of Watling Street; and the "rusted points of pikes, and remains of armour," found with bones near Raby may suggest no older date than the siege of Raby Castle during the Great Rebellion. But what shall be done with the traditionary prowess of one *Blacken*, at Blackens Hill near Birtley Fell, with the battle legend applied to the numerous interments (some of *giants*) to the west of Haughton-le-Skerne church, or with such similar

* Hodgson on the Wrekendike.
† Camd. Remains, p. 3.
‡ There are many legends on the Derwent about the giants Ben and Cor. We have Thrum's (Thrym's) Law near Elwick, and Scald (Scyld ?) Hill near Hart.

stories as are attached to Winston, Painshaw Hill, and Baydales Battela or Battlefield, near Darlington? The vast quantities of human bones found between Billingham and Norton have, in consequence of a guessing note by Leland, been applied to the fight which took place between King Ardulf and his rebellious duke Wada, although the early authors seem to fix it where Speed places it, viz. at *Billington near Whalley*, in Lancashire. Symeon, who knew and often mentions Billingham, never hints that the battle took place there, but merely says that it was fought at "a place which is called by the English *Billingahoth near Walalega.*"*

In the west of the county a notable boundary called the Long Man's † curroch, a sepulchral mound, has a wild tradition attached to it. The Dead Man's Grave was a celebrated boundary in Brancepeth lordship, and similar instances might be adduced. It is by no means easy to determine the character of the circular mounds known as *tumuli*. Many of those existing near old roads may be natural eminences, artificially regulated in shape and made suitable for observation. One such eminence, a little to the north of Piercebridge, is called Smeutherlawe; and I am told‡ that tradition places a whole army under it. Cade saw several barrows in Witton Castle Park. Tumuli seem to be the most plentiful in the north-west portion of the bishopric. A tumulus near Bradley Hall, Ryton, contained a square cavity composed of stones set on edge, which enclosed ashes and remains.§ Tumuli known to be sepulchral may not be of purely artificial construction, and heaps of stones may sometimes be relics of boundary currochs only. Near to the line of ancient road at Tinkler Row are the remains of a tumulus formed of very small field-stones. Another between Rainton and Eppleton is so formed. It is called the Fairies' Cradle (if Surtees herein speaketh soberly), and possibly is connected with the chartered *Cultura de Barewes.*

At Maiden Paps, a grave four feet square was composed of large pieces of limestone, and in it were three rude urns, ornamented with herringbone ornament. They contained

* Mon. Hist. 669.

† Perhaps *Man* in boundaries often means a Stone. If so, such names as the Stone Man will be pleonastic.

‡ By Mr. Denham.

§ Hutchinson.

earth or bones which had been submitted to a very strong heat.* Stone coffins and "holy water jars" have occurred at Low Butterby. Roman urns have been found in Auckland Park near the bridge; and, according to Camden, an urn of uncommon shape turned up at Ebchester. It was nearly a yard high, and not above seven inches wide, with a little cup in the heart of it, thought to be for an oblation of tears, or of wine and milk, such as the Romans used at the burying of their dead. The country people at the same place told Horsley of two or three loads of burnt ashes having been found there, with some large bones and teeth.†

At Piersebridge are numerous interments, all perhaps of Roman date. The bodies lie north and south. Of some the feet are exposed by the washing of the Tees. They are generally in quasi coffins of stone or kistvaens;‡ one fine coffin of lead has occurred. In Carlbury bank (close to Piersebridge), which seems to have been quarried by the Romans, some of the graves or coffins contained two bodies, the head of one resting near the feet of another.§ Above some of the Piersebridge graves heaps of stones were raised.

The heap of stones over a single burial continuing into the Saxon period, we find that at South Yoden (Castle Eden) such a heap covered a skeleton, which lay with the head to the east and was accompanied by a glass vase with projecting knobs, figured in Surtees. Advantage of natural conical mounds was taken for the purpose of burial, and at East Boldon was discovered a rock-grave in a field where the stone rose into the desired form. It contained remains, and a bronze buckle of Anglo-Saxon date, which the Rev.

* Discovered in 1814.—*Surtees.*

† What is the *rationale* of the quantities of stags' and other horns and bones cut into lengths which are found in Roman localities? In this county a square pit full of decayed animal matter and stags' horns, cut into lengths of three or four inches, was discovered at Fulwell. An old native of Gateshead speaks of a similar discovery behind the Bottle Bank in that town in 1802. Horns and large bones had been sawn into lengths of about six inches, and were found on the top of and all around a solid mass of brickwork, about four feet square and from three to four feet high, formed of very fine red bricks, rather larger than common bricks. This description is very cloudy.

‡ A coffin found in the Tofts must have been of one stone, for it was used as a trough, but as "no swine ever throve that ate thereout, it was replaced where first found." Possibly it rather belonged to the cemetery of St. Mary's Chapel, the remains of which are near the Tofts. Horn pins are abundant in the ground beside this chapel.

§ Inf. Mr. Denham.

Geo. Abbes presented to the Newcastle Antiquarian Society.* It is understood that similar prominences occur on the heights above Cleadon.† A few stones may have been piled above such graves.

There is a large tumulus-like mound on the north side of Ryton Church, and the Yoden cairn was on or near the site of an ancient cemetery. The Saxons discontinued solitary burial and clustered together in death. Sometimes a mound on a large scale contains the burials, but eventually natural hills were chosen for the purpose, and this practice may be seen by the site of almost every old churchyard. At Stobcrossfield, on the estate of Thrislington, in July, 1822, a labourer turned up with his pickaxe some broad limestone flags, scarcely eighteen inches below the surface. Beneath them lay a perfect human skeleton. On the right side near the hip-bone was the *iron* head, apparently of a lance or javelin. This discovery was on the highest ground of the field. Another skeleton was found about twenty yards to the north-west with a smaller lance-head, also of iron, but no remains of a shield. Eight or nine other sepulchres, containing remains but not implements, were afterwards opened at very various distances; but all apparently gathered round the crown of the field. The soil and marle, or soft limestone, had been cleared away to the depth of about two feet from the present surface, and each skeleton lay on the level marle; on each side a row of large round or cobel stones was arranged, and on these were supported broad flags of limestone, which covered the deposit. In one of the graves were certainly the remains either of a female or a very young person; but the reliques were much disturbed by curiosity, and were so brittle that they snapped with the slightest touch. The teeth of the two skeletons near which the lance-heads were found were quite perfect. In one of the deposits the bones of a horse, and also of some smaller animal, perhaps a dog, were found mingled with human

* The buckle found at Boldon is similar to the type (figure 11, p. 404,) of Mr. Wright's "Celt, Roman, and Saxon," somewhat in the form of a padlock; at the end of the square pendant are three garnets set in gold studs. The edges of the studs are minutely milled, so to speak, and amply bear out the fame which the Anglo-Saxon jewellers achieved throughout Europe (*Wright*, 416); but they are clumsily fitted to the buckle, which is of itself rather rude, as if the bronze-worker had bought the studs of the goldsmith and applied them himself.

† At Carley Hill quarry, near Wearmouth, several rock-graves and human bones with limpet shells were found imbedded in limstone, rubbish, and surface soil.

remains. None of the bones showed the action of fire; and the black fine mould which results from the decomposition of the human body was visible; but, in the stratum of earth above the covers of limestone, calcined stone and minute particles of charcoal were observed. The graves were dug in various directions.

The site occupies the height of a gradual ascent, commanding a wide prospect to the north, south, and west, and visible from every high south-western peak and station.

The larger lance-head measured very nearly eight inches in length, and a little above one inch in diameter; and the smaller seven inches, by nearly one inch in diameter, at the broadest part. Some small portions of wood still adhered to the larger lance-head.*

Dr. Wilson remarks that the bones of the horse are not found in the older tumuli, where the hound and his spoils alone accompanied the hunter. It may be difficult to define the extent of similar customs at a later date. Mr. Denham states that, in Staindrop church, a Neville's skeleton was found with the bones of a greyhound at the feet, and here the animal might either be a favourite with his master, or sacrificed that the burial might correspond with some of the monuments in which the Nevilles rest their feet on greyhounds—the badge of their noble house. A more extraordinary juxtaposition of human and animal bones was discovered under the western portion of the north aisle of Whitburn church, where the animal accompanying the man, who lay in the usual manner of Christians, was adjudged to be "certainly not a horse, and more than probable a calf."

Generally, pagan bodies are placed north and south, the feet towards the north; but, if the Thrislington sepulture is ante-Christian, the rule does not hold, and the early Christian burials at Hartlepool monastery were in every case (save one) in a north and south direction. These burials occurred about 135 yards distance from the parish church, at a depth of $3\frac{1}{2}$ feet, and immediately on the limestone rock the skeletons, apparently those of females, lay in rows. Their heads rested on small flat stones, each less than a foot square; some of these stones were marked with crosses

* Surtees.

and inscriptions in the usual Anglo-Saxon character, and also in Anglo Saxon runes.* The Christian missionaries were hostile to the use of letters, which had been deemed magical; but kings, priests, and women, to whose sacred keeping the runic secret was confided, were the native leaders of the new faith. Nearly every Anglo-Runic inscription is referred to Northumbria, which before the close of the eighth century was more civilized than any other portion of Teutonic Europe.† The names are female; those of two males only occur, one of them Ediluini, the name of the count who murdered Saint Oswin. The crosses resemble the early ones of Ireland, between which country, Northumbria, and Scotland, an intimate intercourse existed. Bone pins, pieces of coloured glass, and a needle of bone were found. The molar teeth of the skeletons appeared as if they had been filed down, and indicated that grain and peas were the staple food of the deceased. The pins perhaps fastened winding sheets; for, where no distance had to be traversed, no coffins would be needed. Sepulture, in Saxon times, seems to have been of the hurried description, which continued among the middle and lower classes to a very recent period. Bede, in one of his miracles, represents a lad as dying, and the coffin already provided to bury him, and placed by his side till the spirit ascended.

The kist-vaen plan of burial extended into the Saxon period at least, for in a portion of the early cemetery of Durham Abbey were discovered a great number of skeletons closely ranging side by side, in quasi coffins composed of thin stones set on edge. All of them were destitute of sepulchral memorials; but near them, on a later coffin, was a slab with the name of an Earl Cospatric. In another excavation, a singular and late specimen of this kind of grave was opened. It was that of a child, of the shouldered form of a stone-coffin, and composed of nine thin stones; upon it was a thin slab; upon that another stone with ornamented edges; and upon that, again, a ridged stone with Norman decorations.‡

Saintly personages were honoured with stone coffins—sarcophagi, as they were called.

* Mr. Kemble has shown that these were identical with the runes of the Marcomanni and Nordmanni.

† Kemble.

‡ Raine's Durham Cath.

St. Oswin, in 651, was buried in St. Mary's oratory at the north of Tyne mouth; and because the nation in those times and parts was rude, and not much affected by the glory of sepulchres, his reverend corpse was placed in a stone sarcophagus and hidden in the secret bosom of the earth. The saint, after some years had rolled away, revealed himself, and said that his body should be taken up from under the pavement and elevated! It was found at some depth, and elevated accordingly.

St. Cuthbert's first directions for burial were these:—"Bury me in this habitation (enclosure), near my oratory, *to the south*, over against the east side of *the holy cross*, which I have erected there. There is, to the north of that oratory, a *sarcophagus* covered with turf of earth, which Cudda, the venerable abbot, once gave to me. In this lay my corpse, rolling it in the sheet (*sindone*) which ye shall find within it. I would not wear it when alive, but for the love of the woman beloved of God, to wit, the Abbess Verca, who sent it me, I have taken care to preserve it to wrap around my corpse." The reason assigned by *himself* was that, if buried in the monastery, *the criminals who might fly to his corpse for refuge* would bring the brethren into trouble before the secular rulers in interceding for them; and in yielding to their request for his more honourable entombment, he advised them to place him in the inner parts (*interioribus*) of their basilica, where they might visit his tomb and control the visits of others. The injunction was observed, by burying him in a stone sarcophagus on the right side of the altar. Eleven years afterwards, the brethren wished to raise his bones, dry and freed, as they presumed they would be, from all flesh, deposit them in the same place, but above the pavement, in a light ark for the sake of veneration. On opening the sepulchre, not only the body but its vestments* were undecayed and of all their original freshness. The bishop did not go to see the miracle, he was passing forty days of piety in a place rather remote from the monastery and closed in by the waves; but he ordered the brethren to fold the body in new garments instead

* The body of Cuthbert had been wrapped in a cere-cloth, the head enveloped with a face-cloth or napkin, and then he was clothed in the vestments of a priest, the elements were placed on his breast and sandals adorned his feet.—*Raine's St. Cuthbert.*

of those they had brought him as a sample of incorruption. These were "the extreme part of the vestments" only, "those nearest the flesh they feared to touch;" and the chasuble, which was removed afterwards, brought many a miracle.* He ordered them, also, to place the body in the chest they had prepared. This they did: they wrapped the body in a new amice,† and laid the light chest above the pavement. The bishop's body was afterwards placed in the vacant sepulchre, and above it was placed the ark, and to Bede's day miracles were wrought there, "if the faith of the petitioners allowed."

This chest is particularly described by Reginald, in mentioning the translation of St. Cuthbert in 1104. It was wholly of oak, quadrangular, the lid perfectly flat and lifted by rings. "The whole of it is externally carved with very admirable engraving, of such minute and most delicate work that the beholder, instead of admiring the skill or powers of the carver, is lost in amazement. The compartments are very circumscribed and small, and they are occupied by divers beasts, flowers, and images, which seem to be inserted, engraved, or furrowed out in the wood." The narrative, in the Acta Sanctorum, says there were two lids, the second one of which had the rings. At the exhumation of the saint, in 1827, his remains were still in this Saxon coffin, and beasts and images were engraven on it in a rude and minute manner. The flowers had possibly disappeared in the hurry to come to St. Cuthbert himself; or, as Reginald hath a glowing style, his information may in this, as in other respects, be a little amplified. Nevertheless, his beasts, flowers, and images are in harmony with the design, which is peculiar to the second era of Saxon art, and somewhat resembles that of the 12th century. Birds and reptiles disport themselves in its flowing stems. The celebrated Ruthwell cross is the type of this style; and on the south side of Jarrow church, in building the school, a fragment of a tombstone was discovered, which presents birds and foliage, and the tail of a reptile, which might well have been drawn by the conceiver of the Ruthwell and other remains. But the resemblances between the arts of Durham and those of Scotland—where the fame of Wear-

* See Reginald. † Bede, S. Cuth., cap. 42.

mouth and Jarrow, in 710, induced Naiton, king of the Picts, to send to the abbot of those monasteries for architects who might build him a stone church in the Roman manner—do not stop here. Anglo-Saxon runes are alike found in the Ruthwell inscriptions and those of the Hartlepool nuns, while the capitals employed in the Latin legends at Ruthwell are precisely those of S. Cuthbert's coffin and the consecration stone of Jarrow.

On the resemblance of the figures of this period to those of the lower empire, it may be remarked that at a later period Athelstan gave to S. Cuthbert two patens, one of gold and the other fabricated *Græco opere*, words which may fairly be interpreted "of Byzantine work." So also Edmund his son gave *duo pallia Græca*.*

For a description of the fair Saxon embroidery and other remains found with St. Cuthbert we must refer to Mr. Raine's well-known account of their discovery. The beautiful cross of the saint was conventionally given on the chapter seal (which, if not Saxon, is of the very earliest Norman aspect), as a cross patee with a square introduced at the junction of its arms. Such a cross is to be seen attached to the Kilmichael-Glassrie bell case in Dr. Wilson's Archæology. A remarkable matrix of a brass discovered on the site of the old chapel of St. Edmund the Confessor and St. Cuthbert, at Gateshead, presents the further variation of a sort of square knob attached to each arm instead of the usual patee form; and a portion of the same form occurs on the edge of a Roman slab (now in Newcastle castle) which had been built into the wall of Jarrow church flat. The cross must therefore have been a mural one, and composed of several stones.

With respect to S. Cuthbert's reference to a cross at the south of his oratory, on Saxon sites it is usual to meet with the remains of crosses, elaborately adorned with knotwork and figures of various descriptions. We believe there was a custom, at later periods, of having a cross in each cemetery; but more than one Saxon cross are frequently, as at Gainford for instance, found to have existed. The two fine examples at Aycliffe have been supposed to commemorate two synods held in 782 and 789. There are, however, strong

* Hist. S. Cuth.

reasons for doubting the assertion that the Aclea at which those assemblies were held was our Aycliffe, or Acley. It rather seems to have been in the south, at Ockley, in Surrey.* Leland, when he saw three of these crosses at Ripon, standing in row, considered them to be "thinges antiquissimi operis," and to commemorate "sum notable men buried ther." Leland would know all the various uses of crosses, and his idea is borne out by a record concerning a celebrated cross at Lindisfarne and Durham, which Eadfrid, the next successor to Eadbert, made. He caused it to be of stone, in cunning work, to the memory of St. Cuthbert, with his name sculptured upon it; and it was carried about with St. Cuthbert's body, and settling in the cemetery of Durham, afforded, in Symeon's time, a monument of both bishops.† On the original burial of Bishop Acca, of Hexham, in the cemetery to the east of his church, two stone crosses, wrought with wondrous art, were placed, one at his feet, another at his head—the latter inscribed, "Here lies Acca."‡

Portions of elaborately carved knotwork are built up in the walls of Billingham tower, of Jarrow tower, of Lanchester tower, of Gainford tower, of Haughton-le-Skerne chancel, and of Stainton-le-Street nave and chancel. Some singular examples have also occurred at Sockburn.

SAXON ARCHITECTURE.

The history of Anglo-Saxon buildings falls into three divisions. Probably their style does the same.

The First or Anglo-Saxon Period precedes Wilfrid's introduction (circa 670) of the continental mode of building *more Romanorum*, which characterises the second division. At earlier dates we might look for many wooden churches, yet little more answers such an expectation than the fact

* Ockley was a favoured place for such assemblies. Symeon of Durham does not mention the Synods, and Hen. Hunt expressly states that the synod of 789 was in the 6th year of Brichtric, a Wessex monarch. A great battle was fought at Ockley in 851, in the accounts of which the name Aclea is translated into *campus quercus*, the field or lea of the oak.

† "In the Sanctuary or Holy chirch-yard of Duresme be very many auncient tumbes. It standith on the south side of the Minster. And at the hedde of one of them is a crosse of a 7 fote longe, that hath had an inscription of diverse rowes yn it, but the Scripture cannot be red. Sum say that this crosse was brought out of the Holy chirchyarde of Lindisfarn Isle."—*Leland's Itin.* i. 77.

‡ John of Hexham, per Wright.

that temporary oratories of timber were raised. A cell of that material, erected at Tynemouth between 617 and 633, gave way before 642 to a small monastery of stone;* and the wooden oratory constructed, *citato opere*, in 627, at York, for Edwin's baptism, was immediately enclosed by a square basilica of stone.† At Lincoln, about 628, Paulinus originated a stone church of excellent work, the roofless walls whereof existed in Bede's time. The Saxon Chronicle says that Edwin *timbered* his church *of stone* at York, *i. e.* he built it. The word timber frequently occurs in the record in the same sense: if it arose in a period of wooden erections, that period is too remote and Pagan to be of any importance. It has been supposed that the strips on the walls of early towers were in imitation and continuation of a timber style. But as these strips occur in comparatively late buildings, and are wanting in what appear to be the earlier, they may rather be regarded as a rough attempt at ornament or buttressing. They do not occur in Durham, unless the rude framework of windows may be classed with them; and, perhaps, they are provincialisms of districts poor in stone, used like the bands of Roman masonry (uncommon in the North) to bind materials together, as woodbeams bind the plaster of "post and pan" houses.

The Scotch Christians were content with less show than their southern neighbours. At the cessation of the Scotch bishops at Lindisfarne, they left behind them edifices which, except the church, were of the smallest size. In their time, says Symeon, it was not necessary to provide houses for the reception of the powers that were, or of wealth. The former never came to the church but to pray and hear the Word; and the king, with his five or six servants, departed as soon as service was over. The cathedral had risen in 651—fit, as Bede reports, for an episcopal seat; yet, *more Scottorum*, not of stone, but of split oaks only, and thatched with reed. Bede's words, independently of our other evidence of the existence of stone churches, prove that this *mos Scottorum* was not usual in England, or why not *mos indigenorum* or *Anglorum* in opposition to *mos Romanorum?*

As the walls of the Lincoln church were standing in the time of Bede, there is no improbability that buildings of

* Lel. Col. iii. 42. † Bede ii. 14.

this period may be built in with later masonry. They were doubtless very rude in the manner of joining the stones as compared with the works which succeeded them. The habitation of Saint Cuthbert at Farne island is thus described by Bede:—"It is an edifice nearly circular in plan, measuring from wall to wall about four or five perches. By excavating the hill he made it much deeper in the inside than the mere wall, which on the outside was more lofty than the stature of a man; so that the pious inmate might behold nothing from his dwelling save the sky. Which wall he composed, not of squared stone or of brick and cement, but of turf and rough stones, which, by digging, he obtained from the centre of the place. Some of these were so huge that they could scarcely have been lifted by four men; but he is found to have brought them from their locality and placed them on the wall by the assistance of angels. He had two buildings in the enclosure, one an oratory, the other a little dwelling fitted for common uses. The walls of these he formed by digging round or excavating much of the natural soil within and without: the roofs that he placed upon them were of shapeless logs and hay. Moreover, at the entrance of the island was a larger house,* for the reception and rest of the brethren who visited him. Not far from it was a well for their use. But his own habitation was destitute of water, built as it was in a right hard and almost stony hill." He had not yet withdrawn entirely from the gaze of visitors (who, it may be presumed, helped him with his Cyclopean stones), and therefore sent for the brethren, who by his direction dug a pit in the midst of his little cottage (tuguriunculum), and the next morning it had a never-failing supply of water. Saint Cuthbert, in describing the position of his stone cross and coffin before given, mentions open space on the north, south, and east sides of the oratory. His *mansio*† was thus

* Thatched, for some crows were detected in the act of stealing the straws. In recompense they brought the saint a piece of hogs' lard to grease the boots of his guests withal.

† *Mansio* is said by Kemble to be equivalent with *familia*, a hide of land. Symeon uses it in the sense of *villa*, and also as comprising many *villæ* as appendages. "Hæ *mansiones*: Carn*ham* et Culter*ham*, et duæ GEDDEWRD .. quas Egredus episcopus condidit, et Mailros et Tigbrething*ham* et Eoriercorn .. et Pefferham et Ald*ham* et Tinning*ham* et Colding*ham* et Tillemuthe et NORTHAM. Wercheswurd quoque .. cum omnibus appenditiis suis. Hanc enim *mansionem*, &c."—*Mon. Hist.* 675; *Symeon Hist. Alia.* "NORTHAM .. ipsamque *villam* cum duobus aliis quas ipse condiderat .. nuncupatis

the *curia clausa* of after times, the simple successor of the stately chester or *civitas* (as monkish writers translate the word), and justifies Bede's jocular allusion to it as a city fit for Cuthbert's empire, with houses in it suitable to the city. The cottage is called *mansiuncula;* it had a door and a window. The door was long disused, the window having been the only means of communication; but when the saint was dying the former was opened, and Cuthbert was found lying in a corner of the oratory (which must have opened from the cottage) before the altar, and here he seems to have died. Ethelwald, his successor in the island, found that the walls of Cuthbert's oratory were composed of very indifferent planking, decayed and ruinous, and full of crevices, which the saint had stopped up with hay and clay, but which Ethelwald found so blasty in the corner which Cuthbert and he used for prayer, that he was glad to beg a calf's skin to remedy the defect. In the next tenancy Bishop Eadfrid restored the oratory from the foundation. It may appear that only the enclosing wall of the mansio was of stone; the buildings were of earth and timber.

The Second or Romano-Saxon Period extends from the introduction of an improved and continental masonry to the destruction of monasteries by the Danes—say to about 880. A practice now prevailed of English ecclesiastics visiting Rome. In 654, two individuals were at Rome, and they were destined to effect a revolution in the architecture of their native country. One was the turbulent Wilfrid; the other Biscop, of noble blood, he who afterwards received the prænomen of Benedict. Wilfrid was first in architectural order. On his being made Archbishop of Northumberland, in 669, he found the early stone cathedral at York so demolished by Penda, King of Mercia, that it was only fit for birds to build their nests in. He repaired the walls, roofed them with lead, and glazed the windows.

Geddeworde cum suis appendiciis."—*Sym. Hist. Dun.* 90. The *appendicia* of Cnut's *mansio Standrope* were a vast extent of *tuns*. The early *mansio* scarcely seems to differ from the *mansio* or manor-house of after days, generally a diked enclosure of more or less strength, surrounded by its *terræ dominicales*, governed by its *dominus*, occupied by his *family*, and entitled to so much moor and town-field. So many *mansiones* or *familiæ* will be tantamount to so many manors, and, like them, of very indefinite extent and comprehension of tuns, *villæ*, or sub-manors; the *appendages* of larger *mansiones*, like Staindrop, approaching *honours*. *Villa*, often coextensive with *mansio* or *manerium*, certainly represents *tun*. "Pater erat Reingnaldi, a quo illa quam condiderat *villa* Reining-*tun* est appellata."—*Symeon.*

Between 670 and 678 he erected the monasteries of Hexham and Ripon.

In 673, Benedict Biscop founded a monastery at Wearmouth, upon or close to a Roman site. Its material is unknown, but scarce had twelve months elapsed from its foundation when Biscop again crossed the ocean for masons who might make a stone church after the manner of the Romans—a style he always loved (*cæmentarios qui lapideam sibi ecclesiam juxta Romanorum, quem semper amabat, morem facerent*). They prosecuted the work with such diligence that within a year after the foundation had been laid the spacious edifice was roofed and mass celebrated. When it was nearly finished he obtained glassmakers from France, who glazed the windows of the church, the porches, and the refectories, and taught the mysteries of their trade to the natives, who at that time were ignorant of it. Wilfrid had previously used glass, but it had been imported.

Jarrow was founded in 682, on a further donation of King Ecgfrid; a strong peninsula, overlooking Ecgfrid's port. Ceolfrid was despatched to the new possession, on which a suitable convent had been raised for his reception, under the patronage of St. Paul. The establishments of Wearmouth and Jarrow were properly one monastery, founded at two places—they acted in concert and often under one head. In Bede and Symeon, they are called "the monastery of the Apostles Peter and Paul, which is at Wiramuth and in Giruu." At Wearmouth, Bede, who was born on the monastic lands, entered on his sacred vocation; at Jarrow he wrote his great works and died. Jarrow church was dedicated, as we learn from the Saxon inscription in the church, in the fourth year of Ceolfrid's abbacy. The inscription was known to Leland, and, being on a through-stone, seems undoubtedly genuine.*

The most striking characteristic of these works is the skilful masonry of which they are composed. The stones are of cubical form, and set in very regular courses. The church of Ripon was of polished stone, from the foundations in the earth to the summit. The masonry of Wilfrid's crypt at Hexham is a fine example of the period. For

* About 690, Bishop Eadbert took off the thatch from the old wooden cathedral of Lindisfarne, *and covered both roof and walls with sheets of lead.*

this mode of building, of course, stones which the Romans themselves had used were extremely convenient. At Hexham most, perhaps all, of the stones in the crypt are Roman. Jarrow, also, is on a Roman site, and probably most of the stones of the Saxon remains there are filched from the Roman ruins. Wearmouth was on or close to Roman buildings. So situated, also, were York and Ripon. Great intricacy appears in the arrangements, and of these the crypt of Hexham again stands in good stead as an example. That monastery is chronicled as having secret cells and subterranean oratories below, and walls of three distinct stories, and supported by well-polished columns above; thus in no material respect differing from the later cathedral arrangement of crypt, arches, triforium, and clerestory. The walls, the capitals of the columns, and the arch of the sanctuary were decorated with historical, fanciful, and unknown figures in relief, besides surface painting. The body of the church was everywhere surrounded with aisles and porches or transepts, which, by incommunicable art, were distinguished with walls and spires above and below; meaning, probably, that each part was characterized, externally as well as internally, as separate from the rest of the building by roofs of different level and other circumstances. As in the later triforia, various galleries artfully communicated with the whole building, so that crowds could stand around in the spires and galleries unseen by those within. Secret oratories with altars were cautiously erected in these towers and porches. A high wall surrounded the buildings, and they were supplied with water by aqueducts of stone running through the town. They were said to be unequalled on this side of the Alps, and the description would almost apply to later monasteries; but a greater number of porches and galleries, and some sort of towers opening to the interior of the church, are hinted at. The monasteries had more churches than one.* The principal one at Wearmouth had probably no aisles; for figures of the Virgin and of the twelve Apostles were purchased by Biscop in Italy, that he might encompass (*præcingeret*) the roof (*testudinem*) of the middle of the church, by boarding reaching from

* One of them was probably used for parochial purposes. At Hexham and Ripon, we believe, this was the case. We have more monasteries than ordinary churches mentioned for this period.

wall to wall, by which a painted ceiling to conceal the rafters is perhaps meant. Other pictures covered the north and south walls, by which arrangement, Bede says, the whole interior presented instruction. It possessed nave and choir, a galilee or entrance porch, and another porch east of the altar, and dedicated to St. Peter.* At Hexham, Bishop Alcmund wished to be translated into the church as well as Acca, and he was deposited in St. Peter's aisle in the east of the church of Hexham. In process of time they were removed nearer the altar, and laid in a secret part of the church, Acca in a vault near the right side of the altar, and Alcmund in another on the left side. Afterwards they were honourably deposited behind the altar, and very near to it.

Such arrangements occur to us in the remains of the period. In the crypts of Hexham and Ripon there is a demi-vaulted space at the west end of the main room or chapel, apparently to support the steps of the altar. We thus have a chapel underneath the high altar. At each side of the chapel are passages which would each contain a sepulture very well. The place to which the bodies were honourably transferred, above-ground, would be in the extremity of the apse behind the altar, in a similar situation to that of St. Cuthbert's shrine at Durham; and St. Peter's aisle, their first position, would no doubt run round the apse, and this also was the Durham arrangement.

There is greater difficulty in determining the form of the lesser churches of these monasteries; but at both Wearmouth† and Hexham were circular churches, dedicated to St. Mary, like towers; and the Hexham one had four porches or small transepts attached, forming a sort of Greek cross. The abundance of transeptal chapels and burial-places is remarkable in the Saxon churches. At Jarrow there was a north porch dedicated to the honour of Bede.

The monastic buildings must have been very extensive. When Ceolfrid departed from Wearmouth and Jarrow, for he was abbot of both in 716, he left in them about 600 members. Such numbers were not unfrequent, and the major part were employed in tilling the monastic lands and in

* See Haigh's paper on this church, Winchester vol., Arch. Assoc.

† Biscop brought pictures of our Lord's history to "crown all the church of God mother in a circle."

mechanical arts. Sometimes the Abbot of Wearmouth joined his brethren in their work. The civilizing effect of such communities is obvious. The apartments were of course numerous, and some of them very large. At Wearmouth the dormitory must have been to the south of the main church, for the oratory of Saint Lawrence was in front of it, and that was on Ceolfrid's way from his church to the river Wear.

There were the public dormitory and the abbot's separate apartment. At one time there were two Abbots of Wearmouth dying. Sigfrid was carried to the apartment of the founder Benedict, and all the congregation convened there while Benedict appointed their successor. The brethren seem to have had cells or hermitages, if they chose. St. Cuthbert's cell at Farne has occurred, and Bede had a little dwelling of stone for study.

The monasteries were abundant. Bede casually mentions many, and in addition to those he names we may add for Durham those of Gainford and Sockburn,* at both which places knotted sculptures have been detected. Finchale also, Finchaley of rustics, seems to be the Wincanhale where more than one synod was held and a Bishop of Lindisfarne was buried. Ancient foundations and burials revealed themselves in the 12th century, and were ascribed to Finc, a British king who had a seat there. That this was an approximation to the true origin of the name is not improbable, for Finc seems to be a Celtic word, but the foundations of stone savour rather of a Saxon monastery. Centuries had passed since the Danish ravages, and the establishments destroyed might well be forgotten in Reginald's time.

The improved and even elegant characteristics which attached to the crosses of this period have already been noticed. At Hexham there is a peculiar piece of zigzag work, with balusters separating each direction of the lines. It is almost impossible to draw a line between the baluster and triangular work of late Roman art and that of the Saxons. The triangle is not necessarily an evidence of rude architecture, though often found with it, for it is an important element in fine designs, such as the Lorsch

* Symeon, and Sax. Chron.

portico. Nor is it introduced for lack of skill in turning the arch, for it occurs in company with good arches, and only in small architectural objects. Strip work delighted to run through other members of a design, and in conjunction with triangles and semicircles, as at Sompting and Earl's Barton, gave considerable richness to a design. We look upon the triangular decoration as an importation in the Romano-Saxon period. The exactness with which the peculiar ornament of the pilasters supporting triangles in the Lorsch portico is copied in a window at Deerhurst is surprising.

With the destructive ravages of the Danes commenced The THIRD or DANO-SAXON PERIOD. The Durham monasteries fell in 867, the marauders leaving nothing but roofless walls. "Ecclesias longe lateque et monasteria delevit." The church of Billingham, lately built by Ecgred, would share the general ruin. Christianity itself decayed; so much so that for the two hundred years which form this third period scarcely any churches were re-edified, and these "of wattles, and covered with straw;" but no monasteries. Perhaps the words "hæ virgis fænoque contextæ" may bear the construction of referring to the roofs only, as distinguished from the old leaden ones; but, anyhow, Symeon only speaks of repairing. Masonry, such as Wilfrid's or Biscop's, may not be found in this epoch; but it does not appear that new churches degenerated in size. In the south, monasteries were still erected—the celebrated one at Winchester is well known, and, like Acca's corpse in Hexham, the body of its famous Bishop Æthelwold was at first buried in the crypt on the south side of the altar, and afterwards translated to the choir of the church. As far north as York "a wondrous basilica" was "of appropriate altitude and supported by solid columns set under curved arches. Within it sparkled with admirable ceilings and windows, and shone in its beauty, environed with many aisles (or apsidal chapels). It had a great number of apartments with distinct roofs,* which contained thirty altars with various ornaments." † Further north still, building operations were, as Symeon leads us to expect, very scanty.

* Exactly the character of Wilfrid's church at Hexham.

† See Willis's York Cathedral in the Institute's York volume, p. 4.

A wooden church was hastily thrown up in the Roman camp at Chester-le-Street, for the wandering see. After its cathedral character ceased, it was renewed in stone (circa 1045), having stood in timber for about one hundred and sixty-two years. At Durham, a little church of boughs, a small stone structure, and a stone cathedral rapidly succeeded each other. But much building was not required. The times were troublous, and the population could not have materially increased. The walls of their former fanes were not worth the pirate's notice, and accordingly we find them renovated as parish churches. The structure so used at Tynemouth had a tower, as we learn from the life of St. Oswin published by the Surtees Society. A church at Gateshead succeeded the old monastery *ad capræ caput*, probably before the Conquest, for Bishop Walcher was murdered there only fourteen years after that event. Churches were existing at Norton, Darlington, Auckland, Aycliffe, Sedgefield, Egglescliffe, and Brancepeth before 1085. As to Jarrow and Monkwearmouth,* both had been repaired, for the Red Book of Durham and Howden alike state that the church of St. Paul at Jarrow was burnt by the Conqueror, and the church of St. Peter at Wearmouth by Malcolm. A short time before this last destruction of Jarrow church the monks of Durham passed a night in it, on their flight to Lindisfarne (1070). Nearly fifty years before it had been the scene of Ælfred Westoue's famous theft of Bede's bones, a matter of time and difficulty.

It is not very easy to fix the date of the commencement of the Norman style in England. We know that Edward the Confessor was buried at Westminster "in ecclesia quam ipse novo compositionis genere construxerat, a quo post multi ecclesias construentes exemplum adepti opus illud æmulabantur." Did this new style arise by sudden importation or gradual transition? Possibly by the addition of Norman detail to a changing style, for the English-Norman is *sui generis*, it is behind the continental in date and inferior to it in beauty. Compare the churches at Caen with the choir of Durham cathedral.

* Some of Wilfrid's spires and battlements existed at Hexham in the days of Richard the local chronicler.

The Normans introduced a better class of lay buildings, and on their arrival many churches were raised "novo edificandi genere," * and perhaps the style would progress more briskly. Some details of a Saxon nobleman's house at Bedlington occur in Reginald. The roof was thatch, and if Cuthbert would become a denizen of the lord's house roses and lilies should be sprinkled, and the walls glitter with shields of gold. The Saxon style would influence the new one for the usual period of transition, and in some particulars be independently similar to it; but the discovery of these in later work no more ignores the existence of Saxon churches than the herring-bone masonry of medieval edifices the existence of Roman stations. In all the churches of known date after the Conquest the Norman style is fully developed.

After the second burning of the buildings of Jarrow and Wearmouth they remained waste for three or four years, and naturally fell into evil plight; so that, when they were given to Aldwine and his monks, their bare walls belied their ancient grandeur—beasts and birds, trees and brushwood, were their occupants.† At Jarrow the monks placed a roof of rough logs and straw upon the existing walls (of the church, apparently), and recommenced divine service; and made *casula*, huts under the walls, for their repose and meals. When the bishop saw that they wished to re-edify the church, and restore the destroyed habitations, he gave them various townships, so that they might perform the intended works, and live free from indigence. The word applied to the church is *reædificare*—that to the monastic buildings, *restaurare*. Shortly after Aldwine's arrival, Waltheof, Earl of all Northumberland, had given to the restored community of Gyrue the church of Tynemouth, but even then mentions an intention to remove the monks to a more suitable abode at Durham, because that place (meaning Jarrow, we think,) appeared as yet too rugged and uncultivated for religious persons. The church of Tynemouth had lain waste for a longer time than Jarrow, viz. for 15 years; but its walls were also *in statu quo*, and a roof alone was provided. The same process was next applied to the monastery of Wearmouth. Huts were

* Malmsbury. † Symeon Hist. Dun., and Lel. Coll. iii. 365.

formed of boughs, and the church of St. Peter cleared of the shrubs which covered the whole, and furnished with a roof *quale hodie cernitur*, saith Symeon writing after 1096.

The words are important, as fixing the church on the old site until the time that the choir and transepts of Durham cathedral were built, and that as the tower now remaining at Wearmouth is admitted to be of some earlier date it must be that of the old church. The rest of the building may possibly have been annexed to the tower in a different way, but there are points in the plan of the Wearmouth church* which suggest rather the contrary.

The only other documentary evidence to be noticed is the interesting fact that, in 1362, a *vetus ecclesia*, described about 1440 as "a place called *the ald kirke*," existed at Wearmouth. At both these dates it contained a *tassa* or *mowe*, at the latter time composed of hay; and in this place a Scotchman encouraged by the Hiltons would set his horse, defiling it and eating the hay.† The name is like that of "chapel" at the present day, so heterogeneously applied to ancient edifices of divers sorts. We have three fields to the south of Hart in this county called "Old Kirk,"‡ and Kirkby near Furness is named from "The Kirk," a circular bank of earth and stone 75 feet in diameter, which the neighbours think was "a place where their forefathers worshipped."§ Yet as the Saxon monasteries comprised more churches than one, probably the Ald Kirke at Wearmouth actually represented an ante-conquestum church, the round one of St. Mary's.

From the grants of large estates for repairs we may gather that the church of Jarrow was in greater decay than that of Wearmouth, and expect that what is Norman at the former may be Earlier at the latter. And this is the case. There is an Early Norman tower at Jarrow which may reasonably have been the immediate result of the grant, and there is an earlier tower at Monkwearmouth, which, as is continually the case, has survived all the various fortunes of its companion members of the church. But

* Detailed by Mr. Haigh, in the Winchester vol. of the Brit. Arch. Assoc.

† Wearmouth Rolls. Sur. Soc.

‡ Particulars of the Lumley sale of Hart Manor.

§ Archæologia, xxxi. 450. The "church" of Church Field at Ickleton turned out on excavation to be a Roman building.

Jarrow was not wholly re-edified.* The *early Norman tower* is built independently of *an earlier chancel.* There is no bonding between these parts. The new tower was built, and the space between it and the ruinous chancel filled with irregular masonry, the upper portion of which was again disturbed to receive a Decorated window. The chancel is composed of cubical stones about the size of Roman walling stones, and much less than those used in the monastery, which (unless the Norman doorway and mouldings are insertions)† may possibly be Norman. It has some small windows at an unusual height from the ground, blocked in a very interesting manner, and a doorway, both constructed on the principles seen in other Saxon buildings.‡ The masonry of the tower differs from both monastery and chancel.

The tower of Wearmouth church is very confined in its dimensions in proportion to its height. It had a semicircular doorway to the south, another still opens to the east into the church, and another (according to Mr. Haigh) opened to the north.§ On the west, two balusters turned in a lathe, and at some elevation from the floor, have supported a semicircular arch, probably a recess‖ rather than another doorway. Above this object is a window with a semicircular head, and decreasing in width from the bottom like the lights of some of the Irish Round Towers. It is surrounded internally with the cable moulding so common on Saxon crosses. By being lengthened at a later period it now cuts a most interesting external string-course, bor-

* Leland (Collect.) gives an observation of a monk of the 11th century (or perhaps of himself, for his quotations and notes are much confused,) that Jarrow was once and again so depopulated by the Danes that *few* vestiges of antique work and structures remained *in situ.* The three resident monks exhibited Bede's oratory and a little altar which he had used.

Buck's view of Jarrow gives much of the monastery that is now destroyed, including some lofty arches, Saxon or Norman.

† The stones of the doorway are singularly sharp and fresh as compared with those of the adjoining wall. There is also a door with a triangular head, the stones of which overlap.

‡ See Haigh's description, *ut supra,* which need not be detailed here.

§ Agreeing with the towers of Bardsey and Barton-on-Humber.—*Haigh.*

‖ "A recess with an angular arch is found in the same situation in the tower of Barnack church, and another seems to have existed in the west wall of the western appendage to that of St. Peter's, Barton-on-Humber."—*Ib.*

Mr. Haigh suggests that such recesses might contain the seats of abbots or other officers. This is borne out by Cott. MS. Claudius B. iv., where a king and minister are sitting under an arch supported by balusters very like those at Wearmouth, and, as there, with capitals, but no bases.—*See Arch. Journal,* i. 28.

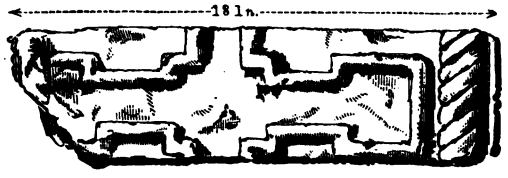
dered by cable mouldings, and divided by balusters into compartments filled with animals. Above the window are the remains of an external rood similar to that on the west end of the Saxon church of Headborne Worthy near Winchester.* The belfry windows are framed, as it were by stripwork, but we are not sure that any one of their pillars was a baluster intentionally. One of them is now slightly in that form. The strings at Wearmouth are square. A bold cavetto cornice occurs in the interior, a feature equally found in Saxon MSS. and Norman architecture.

With little doubt about the Saxon origin of this tower, we hesitate to ascribe it to Benedict, because at Billingham we have another tower of very similar proportions and belfrey windows, for the stripwork of which a Saxon cross has been cut up. Billingham was built about 840. It was afterwards wrested from the church of Durham, and formed the southern boundary of the Pagan Scula's usurpation about 910. About 1072 the Conqueror restored the vill to the monks, and about 1200 Bishop Philip added the church, which had received a transitional nave a little before. Had the church been Norman it would scarcely have required rebuilding so soon. The tower seems to have received a transitional vaulting in the lower story at the same time. The belfry windows of Billingham have much in common with those of Wearmouth, with the additional feature of a star above the double lights, but within the bounding arch of stripwork. May not both these towers belong to the later or transitional Saxon style, when the monastic churches were renovated for parochial purposes?

The central tower of Norton church is, perhaps, the most ancient *infra aquas*. On the loss of Billingham, Norton was the only portion of the wapentake of Sadberge in the neighbourhood that belonged to the church,† and would no doubt have a place of worship. In 1085 its church received the secular priests expelled from Durham, and rather earlier than Billingham church it received a transitional nave, when the tower was altered so as to secure a uniform vista of the same style. The transept arches are of the rudest

* See Haigh, *ut supra*, p. 411.
† Northtun was given by Ulfcytel, Osulf's son.—*Lib. Vitæ Dun.*

description, without mouldings, only the voissoirs are made to project into a square edge. The arches opening to the nave and choir have transitional mouldings inserted. Above each of the four arches is a window with a triangular head, and in the next story are some rude slits. The higher portion of the tower is perpendicular, with thinner walls than the lower. The original chancel was more narrow than the present one (Early English), and the whole of Jarrow church was remarkably narrow. The north transept at Norton is composed of very small square stones, with angles of long and short work, which also appeared in the south transept before it was re-faced.



PORTION OF CROSS FROM JARROW.—*See p.* 81.

ON THE LIMES RHÆTICUS AND LIMES TRANSRHENANUS OF THE ROMAN EMPIRE.*

By JAMES YATES, M.A.

The Romans thought it necessary to denote the extent of their empire by known and visible boundaries. To a great degree this object was effected by the shores of the ocean. In other cases great rivers, such as the Rhine, the Danube, the Euphrates, and the Tigris, were the boundaries of the empire. But where these natural landmarks did not exist, the Romans constructed them by art, and a boundary so formed was called *limes*.† This distinction between natural

* I have adopted these names, because they appear to have been given by the Romans themselves to the two portions of that great boundary which I am about to describe. In the Life of the Emperor Aurelian by Vopiscus (c. 13), we find mention of the *Limes Rhæticus*, which must, I think, have been its eastern half, extending from the Danube to Lorch. The term *Limes Transrhenanus* is used in like manner by Trebellius Pollio, who says that the Emperor Valerian made Posthumus "Ducem limitis transrhenani" (*Trig. Tyranni*, II.), referring evidently to the western part of the same artificial frontier. Vopiscus (*Tacit.* 3) calls it *Limitem trans Rhenum*. Buchner and other modern antiquaries have distinguished the eastern portion of it near the Danube by the name of *Limes Transdanubianus*, but without authority from ancient writers.

† We find the term thus applied in the Itinerary of Antoninus. In the title prefixed to the first route in Britain, viz:

"A LIMITE, ID EST, A VALLO, PRÆTORIO USQUE,"

vallum and *limes* seem to be synonymous. I apprehend, however, that the *vallum*, properly so called, was only a part of the *limes*, which included other means of partition and defence besides a mere wall or mound. In this passage the author evidently refers to the "barrier of the lower isthmus," which now crosses the north of England, extending from the Tyne to the Solway. Richard of Cirencester, in his work *De Situ Britanniæ*, taking his information from a later authority, also employs both of these terms, and apparently in the same sense; but he applies them to the higher barrier, viz., the wall of Antoninus Pius in Scotland.

A brief notice of these British *limites*, enabling the reader to compare them with the German, and to consult the most accurate descriptions of them, will probably not be unacceptable.

The lower barrier, commonly called the Wall of Hadrian, is described by Horsley, Hutton, Hodgson, and, last and most minutely, by the Rev. J. C. Bruce, in his excellent volume entitled, The Roman Wall, second ed., London, 1853. This extraordinary work differs from all the other *limites* of which I have any knowledge, inasmuch as a strong wall, built of hewn

and artificial boundaries is clearly indicated by Spartian, in his account of the life of the emperor Hadrian, and he also asserts that such boundaries consisted of palisades, or, as he says, "of great stakes driven into the ground and connected together, so as to form a hedge having the resemblance of a wall."* We find a vivid illustration of this account in the sculptures upon the column of Trajan, which is still standing at Rome, and represents the victories of that emperor, the immediate predecessor of Hadrian, over the Dacians. See the annexed woodcuts.

FROM THE COLUMN OF TRAJAN.

stone in regular courses, cemented by mortar, forms its most conspicuous feature.

The barrier of the higher isthmus, extending from the Forth to the Clyde, has been described by Alexander Gordon (*Itiner. Septentr.*), General Roy (*Milit. Ant.*), John Horsley (*Britan. Rom.*), and with the greatest fulness by Robert Stuart in his *Caledonia Romana* (second ed., revised by Professor D. Thomson, Edinburgh, 1852, 4to.). The Caledonian wall was constructed by the Legate Lollius Urbicus, under the Emperor Antoninus Pius, about A.D. 140. Agreeably to the account given by the historian Julius Capitolinus (*Ant. Pius*, 5), it was a *murus cespititius*, that is, a mound of earth and stones, without mortar or masonry. This mound (*agger*) was accompanied on its northern side by a ditch or foss, still conspicuous in several places, where it varies from 20 to nearly 40 feet in width, by from 6 to 20 feet in depth. On the south, at a little distance, it was moreover accompanied by a road, which, as we learn from its existing remains, had a strong curb-stone along each side, and the intermediate space, nearly 20 feet wide, was paved. Forts, or camps, about nineteen in number, were placed along the *agger* on its southern side, and were on the average about two miles apart. This *limes*, passing for the most part through forests, appears to have had a great resemblance to that in Germany. The chief difference seems to consist in this circumstance, that it was frequently conducted over low grounds, marshy, and subject to inundation, on which account drains were made under it to carry off the water. See Stuart's *Cal. Rom.*, pp. 282, 283, 316, 353, 357.

* Per ea tempora, et alias frequenter in plurimis locis, in quibus barbari non fluminibus, sed limitibus dividuntur, stipitibus magnis, in modum muralis sepis, fundituş jactis atque connexis, barbaros separavit. Spartiani. *Hadr.*, c. 12. See Casaubon's Note.

FROM THE COLUMN OF TRAJAN.

We here see soldiers armed with the hatchet and the adze, felling trees, carrying them away, and employing them in the construction of palisades, bridges, towers, and other fortifications. But, although in this passage the Roman historian speaks only of palisades, we have abundant evidence that mounds of earth, ditches, and walls of stone were likewise employed.

In reference to these two kinds of boundaries, the natural and the artificial, the soldiers who protected the borders of the empire were called either *riparienses* or *limitanei*.* The lands which were acquired in border wars

* Spartian mentions the *limitanei milites* in Egypt. *Pescen. Niger*, c. 7. See also Vopisci *Probus*, c. 14; *Aurelian*, c. 38; and the Notes of Casaubon.

Having inquired from Mr. Joseph Bonomi whether he had seen any remains of a boundary-wall for the Roman province of EGYPT, I received from him the following answer:—

"I recollect distinctly a crude brick wall, 8 or 10 feet thick, appearing above the sand, and disappearing at very irregular intervals, and for very irregular lengths, nearly all the way on the road from the town of Assuan to the place where the boats which ascend the cataract take in again their cargoes: and I believe it to be the same wall which is occasionally seen, more or less perfect, on that side (the eastern) of the valley of the Nile through Nubia. Sometimes it is built up the sides of a rocky promontory that commands the river, inclosing between the river and the desert ruins of unburnt brick and stone; sometimes appearing across a sandy plain, joining two or more isolated rocks, on the margin of the desert.

"I know walls of brick are also to be met with in Egypt proper, on the same side of the river, but I do not distinctly recollect where.

"Very little of what exists further than the sight can reach is known to any Egyptian travellers; for very few land except where there are ruins of renown. It would be a most desirable thing to make a journey up one side of Egypt, along the edge of the desert, and down the other. It would be sure to reward the antiquarian, the botanist, and geologist, that could speak Arabic."

The barrier, whose fragmentary remains are here described by Mr. Bonomi, may

were sometimes bestowed by the Emperor on the generals belonging to this class, and the soldiers who fought under them, and became hereditary on condition that the owners should bear arms, and on the principle that they would fight most bravely and constantly in order to protect their own possessions.* This was the origin of the *Fundi limitrophi*, which are the subject of a chapter in the Codex of Justinian. They were estates held by the soldiers who defended the boundaries, on condition that they should discharge this service to the empire. In return, the occupiers and their children and heirs held them free from rent, with liberty to cultivate them for their own advantage.†

have been older than the occupation of Egypt by the Romans, but adopted by them as the boundary of their province. The first part of this barrier appears to be the ancient wall of brick (*Alte verfallene Backstein-Mauer*), which is represented in the map to Ritter's *Erdkunde*, vol. I. p. 680, proceeding southward from the ancient Syene in a course parallel to the Nile, and for a distance of seven kilometres.

Another learned friend, the Rev. John Kenrick, of York, has furnished me with the following notice in regard to the boundary, or *limes*, of the Roman province, AFRICA :—

"This trench was made by the Carthaginians, to mark the limit between their territory and that of the nomadic tribes. It is mentioned by Phlegon, c. 18, Εὔμαχος δὲ φησιν ἐν περιηγήσει Καρχηδονίους περιταφρεύοντας τὴν ἰδίαν ἐπαρχίαν, &c. It probably began at Taphrura, on the eastern side of the Carthaginian territory, opposite to the island of Cercine, and ran to Tucca, on the northern coast, between Hippo and Carthage. I do not know that it has been explored, travellers confining themselves to the coasts. It seems to have continued in the Roman times, and to have been the boundary between their province and the territory of the sons of Massinissa; for Pliny speaks of a 'fossa Thenas usque perducta' (5, 3 ad fin.). Now Thenæ is very near Taphrura, which, from its etymology, seems to denote a *limes* made by a trench."

* Sola, quæ de hostibus capta sunt, limitaneis ducibus et militibus donavit, ita ut eorum ita essent, si heredes illorum militarent, nec unquam ad privatos pertinerent; dicens, *attentius eos militaturos, si etiam sua rura defenderent.* Lampridii, *Alexander Severus*, 58.

Posthumus, who afterwards aspired to be made emperor, was one of these *limitanei duces.* See note *, p. 97.

† Codex of Justinian, C. XI., Tit. LIX.

De fundis limitrophis et terris et paludibus et pascuis limitaneis vel castellorum.

1. Impp. Valentinianus Theodosius et Arcadius A A A ad Licinium P P — Tiberianus ad possibilitatem singulorum quorunque locorum intuens statuit certas possessiones quae ad limitem frumenta conveherent—Quocirca generali lege sancimus Tiberiani dispositionem oportere observari, amoventes quidquid vel potentia cuiuscunque elicuit vel furtiva deprecatio, addentesque nihilominus in futurum nulli licere adversus utilem vetustatem et praesentem legem nostram importuna et respuenda reposcere. Dat. XVIII. Kal. Oct. Aquileiae, Arcadio A. et Bautone Conss. (385).

2. Impp. Honorius et Theodosius A A Asclepiodoto P P et consuli ordinario—Quicunque castellorum loca quocunque titulo possident cedant ac deserant, quis ab his tantum fas est possideri castellorum territoria, quibus adscripta sunt et de quibus judicarit antiquitas. Quodsi ulterius vel privatae conditionis quisquam in his locis vel non castellanus miles fuerit, detentator inventus capitali sententia cum publicatione bonorum plectatur; Dat. V. Non. Mart. Constantinop. Asclepiodoto et Mariniano Conss. (423).

3. Impp. Theodosius et Valentinianus A A Nomo magistro officiorum — Agros limitaneos universos cum paludibus omnique jure quos ex prisca dispositione limitanei milites ab omni munere vacuos ipsi curare pro suo compendio atque arare consueverunt et si in praesenti coluntur ab his firmiter ac sino ullo concussionis gravamine detineri et si ab aliis possidentur cujus libet spatii temporis praescriptione cessante ab universis detentatoribus vindicatos iisdem

In Europe, the boundary of the empire was changed with the extent of conquest, but never went far beyond the limits, which were originally appointed by Augustus in his testament, and which were the Danube and the Rhine. Not far from the mouth of the Danube the traveller observes the remains of a ditch and earthen mound, probably made under the direction of Trajan, and evidently connected with his roads, encampments, and other works in that part of his dominions. This wall commences at a place called Tchernawoda, and terminates on the Black Sea, so as to include a space bounded by the Black Sea, the Danube, and the wall itself.* From Tchernawoda westward the Danube itself appears to have been the barrier of the empire to some distance. But another artificial boundary, resembling the first, was formed between the Danube and the Theiss, and it extended from Pesth (*Contra Aquincum*) to the south-east by Szolnok towards the mountains of Transylvania, pursuing the water-shed between the rivers Körös and Maros. Its *vallum*, traversing Hungary in a pretty direct course, still remains to a great extent, and is called by the people of the country *Ordög árka*, and *Churse árka*, meaning *Devil's Dyke*. This is probably the very same work, the construction of which is exhibited on Trajan's Column. From Pesth, going westward, the river again became the boundary.†

The *Limes*, which it is the object of this essay to describe, was made to join the Danube and the Rhine, including the

militibus sine ullo prorsus (sicut antiquitus statutum est) collationis onere volumus assignari. * * * * Dat. prid. Id. Sept. Constantinop. Maximo II. et Paterio Conss. (443).

* "In consequence of the steamer halting for a day at Tchnernawoda, we set out to explore the wall of Trajan. Our walk across the hills was delightful. In every green hollow were thickets of lilac and numerous flowering shrubs. In about an hour's walk we came to the wall, which joined the Danube to the Black Sea. A camp, the dimensions of which may still be traced, formed its defence towards the river; and its high green *vallum* and accompanying ditch may be seen running over ridge and hollow to the sea. The whole of the next day, in our descent of the river, these were still visible on our right, till we arrived at our destination on the Euxine Sea."—*The Danube, by* Wm. Beattie, M.D. *illustrated in a series of Views by* W. H. Bartlett, *London*, 1844, *4to.* p. 228.

It is remarkable that this portion of the *Limes* is on the south or right side of the Danube. But the fact is illustrated by a passage of Procopius (*De Ædif. Just. L.* IV. *cap.* 5), where he says that the Roman Emperor, meaning probably Trajan, had secured the whole course of the Danube by fortifications, sometimes on the right side of the river, sometimes on the left; that many of the fortifications consisted of a single tower, such a tower being called μονοπύργιον, and adapted for a few soldiers only: and that these were easily destroyed by Attila and his army.

† I owe this information to my learned, accomplished, and noble friend, Francis Pulszky, of Eperies, in Hungary, now resident in Highgate, near London.

territories which the Romans had conquered and wished to retain, and probably agreed upon by the native Germans in concurrence with the Romans, as the means of preventing aggressions and disputes.* But, whilst this was its primary object, it was also constructed so as to serve as a defence. The troops employed in making it were principally the eighth and twenty-second legions, with certain cohorts.†

With regard to its direction, it generally went in straight lines, going up hill and down the steepest declivities, without deviating from its direct course. When it turned, the deviation was more commonly in an angle, sometimes in a curve. It usually passed through uninhabited lands, and over mountains which were covered with forests, and the mountain tract fixed upon for its course was commonly the water-shed. For this choice we shall find a manifest reason, when we come to the examination of particular places; but it may now be observed in general, that by being conducted along the water-shed it was likely to be permanent, whereas in any other situation it would have been liable to be continually destroyed by the action of streams and torrents.

As the principal design of this *limes* was to serve as a boundary, marking the division between the Roman territory and the lands which still remained in the possession of the native tribes, so it was in its construction essentially a palisade, or stockade. This supposition is supported by

* The map, prefixed to this memoir, is designed to show the direction and extent of the *Limes*. The *Tabula Peutingeriana*, made probably in the fourth century, rudely represents the Danube and the Rhine rising in the Alps, and flowing in opposite directions, the Roman roads and cities lying almost entirely to the South of these rivers, and the territories of the Bructeri, Suevi, Alemanni, Armalausi, Marcomanni, and Vandali to the North. In Reichard's *Orbis Antiquus, Tab.* X. and XII., the same fact is exhibited with the accuracy of modern research. In the opinion of Paulus (163–167, see Appendix), there was a Roman road, made perhaps before the construction of the *limes* eastward from Pfahlbronn; and Dr. Mutzl of Eichstädt has expressed to me the opinion, that the Romans still maintained certain roads across and beyond the *limes* in order to communicate with their distant settlements in Bohemia. His memoir and map, explanatory of his views, will be published, as he informs me, in the Transactions of the Royal Academy of Sciences at Munich.

† The 3rd and 4th Cohorts of the Vindelici were employed in the Taunus. Steiner, *Codex*, I. p. 126, 127, 147, 257; II. p. 63. Also the 3rd Cohort of the Treveri, Römer, p. 97. An inscription found at Murhardt in Wurtemburg, mentions "Cohors XXIV. voluntariorum civium Romanorum." Stälin, p. 8. Steiner, *Codex* I. p. 43. For the explanation of these and other references, I refer to the catalogue of authorities in the Appendix.

Steiner observes, that the Vindelici appear to have been, like their successors, the modern Tyrolese, excellent brickmakers and builders. At one place near the Rhine more than one thousand bricks have been found with their stamp.

the account which I have already quoted from Spartian; but it is established as an unquestionable fact by its ancient names, which have been transmitted, without any material change, from the earliest times. In some parts, indeed, the wall is called *die Teufelsmauer*, or *dieTeufelshecke* (the Devil's Wall, or the Devil's Hedge), and in a part of Wurtemburg *der Schweingraben* (the Hog's Ditch). But in all other places it is called *der Pfahl, der Pfahlrain, das Pfahlwerk, die Pfahlhecke, der Pfahlranken, der Pfahldamm* and *der Pfahlgraben*, in all of which names we find *Pfahl*, meaning a palisade, and etymologically allied to the Latin *palus*, and to the English *pale*, or *pole*, in conjunction with other substantives, denoting *a hedge, a work, a border, a dam, a fence*, or *a ditch*. It is to be observed also, that, according to the varieties of dialects, *pfahl* in different places, and at different times, becomes *pahl*, or *pohl;* that these names are proved, by the evidence of charters and other ancient documents, to have been used for at least eleven centuries;* and that the German language has been the universal language of the country ever since the termination of the Roman power. Evidence of the same kind is afforded by the following names of places, which occur continually along the line of the wall, viz., *Pfahläcker, Pfahlsberg, Pfahlbach, Pfahlborn, Pfahlbronn, Pfahlbrünnlein, Pfahlbrünnchen, Pfahlbuck, Pfahldöbel, Pfahldorf, Pfahlfeld, Polgöntz, Pohlhaide, Pfahlheim, Pohlstrasse, Pfahlweg, Pfahlweiher, Pfahlholz, Pfahlwasen*, and *Pfahlwiesen*. In these names, words signifying *field, mountain, brook, well, spring, street, way, thicket, heath, village, plain, home, house, wood, pond*, and *meadow*, are found in conjunction with *Pfahl* or *Pole*, so as to express that the field, brook, well, village, pond, and so on, was set near the palisade.† Hence, although not an atom of the palisade can now be discovered, the permanent and certain memorial preserved in

* The Pfahlgraben is mentioned under the name *Pollum*, A. D. 791, in the Cod. Laurisham. III. Nr. 3716; and under the name *Phal* or *Phael*, A. D. 812, in the Terminatio eccles. s. Fer. in Mon. Blidenstadt. See Vogel, p. 135, note 1.

The foundation charter of the Collegiate Church of Oehringen, in Wurtemburg, A. D. 1037, mentions *Pfahl bach*. Hanselmann, pp. 67, 68. A place on the *limes* is called *Phal*, A. D. 1043, in Joannis Rer. Mogunt. II. p. 514, &c. (Römer, p. 99).

Palas, a place mentioned by Ammianus Marcellinus, L. XIII. is with reason supposed to have been on the *Limes*, where it passes to the north of Lorch, through Wurtemburg.

† To the places may be added one in the Spessart called "*Beim Echterspfahl*;" a family named *Echter* owned part of the forest in this vicinity. Steiner, p. 276.

the language of the country is a decisive proof of its former existence.

The palisade is not the only part of the *limes* which has vanished. There can be no doubt that on the outside of it, *i.e.* on the side next to the German territory, there was all along a space clear of wood, and so wide that any one venturing upon it might be reached by the javelins of the Romans. Indeed, it is manifest that, after the position of the *limes* had been fixed, the next step towards the formation of it would be to cut down the wood, the very act in which the soldiers of Trajan are so actively employed upon his monumental column. The army would thus be supplied not only with fuel, but with materials both for the palisade and for all the towers, bridges, and other constructions connected with it. But, besides the supply of building materials, this felling of timber and clearing of the forest was also subservient to defence. A mere palisade, without this addition, might have been a sufficient landmark, and it might also have been extremely useful in preventing the straying and stealing of cattle and of game; but the enemy, concealed by the forest through which it passed, might have broken through it, or destroyed it with the greatest ease. It was therefore indispensable that the forest should be cleared to a sufficient distance all along the palisade, so that any person approaching it might be observed. The German mode of fighting was often a kind of guerilla warfare: the natives were hidden in their mountain fastnesses and the recesses of their forests, and, if provoked and tempted, were always ready to make incursions in greater or less force. The only defence against such attacks was by removing the means of making them; and to this defence we have, I think, a clear allusion in the remarkable work of Frontinus upon Stratagems. He says, "The Emperor Domitian, when the Germans after their manner kept attacking the Romans from their concealed abodes in the forests, and had always the means of a safe retreat in the depths of the woods, made limits through the extent of 120 miles, and thus not only changed the condition of the war, but subjected the enemy to his control by uncovering their places of refuge."* This passage

* Imperator Cæsar Domitianus Augustus, quum Germani more suo e saltibus et obscuris latebris impugnarent nostros, tutumque regressum in profunda silvarum

must be explained as I have proposed, and it probably refers to a part of that boundary, which I am now describing. The time referred to by Frontinus was the year 84 of the Christian era, consequently long before the final completion of the boundary by Hadrian and Probus.

The forest having long ago resumed its original dominion, and the palisade having decayed and disappeared, we now trace the *limes* solely by the portion of it which consisted of earth or stone. The clearest and most abundant indications of its course are exhibited in the remains of a *vallum*, *agger*, or mound, of a *fossa*, or ditch, and of watch-towers, or signal-stations, which were probably erected throughout its whole extent.

The *vallum* is formed of various materials, according to the nature of the ground over which it passes. At one spot, where I saw it well displayed to the North of Friedberg and Butzbach, in Hesse Darmstadt, it consists of good loam or soil, adapted for agricultural purposes. Accordingly, I observed the fresh marks of the husbandman's spade used in spreading it over his cornfields. In most places it probably consists of a mixture of earth and stones, because the ground through which it passes, and which is overgrown with extensive forests, is of this description. In a great part of Bavaria, these forests grow on a rocky ground belonging to the oolite formation. The covering of vegetable soil is very slight; tabular masses of oolitic rock are scattered around; these have been collected from the surface, and piled, or thrown together so as to make a kind of stone wall; yet this wall cannot be regarded as masonry, because the stones are of such a form that they could not easily be arranged in any other position. This is shown in the second of the following six sections. Dr. Antony Mayer mentions a spot, visited by him, where the wall had disappeared, because its stones were taken away to build the schoolhouse in the adjacent village of Pfahldorf.* Another variety in the material of the vallum is a solid rock, which seems analogous to our mill-stone grit, and which I found *in situ*, with the ditch cut through it on the eastern side, and the rock in its original

haberent, limitibus per centum viginti millia passuum actis, non mutavit tantum statum belli, sed subjecit ditioni suæ hostes, quorum refugia nudaverat. Frontinus, *Strateg.* I. c. 3, 10.

* *Zweite, Abtheilung*, p. 10.

and undisturbed position forming part of the vallum. This rock is called the Bemberle Stein, and is situated about half-way between the town of Lorch and the village of Pfahlbronn, in the kingdom of Wurtemburg. I must add, that in various parts of the *limes* there was no vallum of any kind. Certainly no traces of it are to be seen through considerable districts; and, although there can be no doubt that in numerous instances this is owing to disturbing causes, such as human labour, the progress of cultivation, or the effect of rain,* yet I am of opinion that there were certain situations, in which it would have been useless or untenable, and where the raising of it was never attempted. Its height varies; but its medium dimensions may be stated as follows: from three to six feet high, five feet wide at the top, and ten feet wide at the bottom. Thus, the formers of it appear to have taken the Roman pole, or *Decempeda*, as their measure; for the width at the base is generally about a Roman pole, the width at the top being half a pole.

I introduce here six sections from remote parts of the line. They are all reduced to the scale of one centimetre to four English feet, and may thus convey an idea of some of the principal varieties in the form and dimensions of the vallum. Also, in illustration of this account, see Hanselmann, *Tab.* XI., where there is a representation of its appearance at Jaxthausen, near the border of Wurtemburg and Baden. To these I must add Mr. Albert Way's characteristic sketch of the ditch near Saalburg. See below.

ACTUAL SECTIONS OF THE AGGER.

Scale one centimetre (———) to four feet.

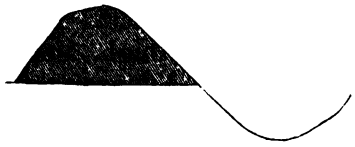
On the Pfahl buck, near Kipfenberg, Bavaria.

In the Oolitic district, north of Eichstadt, Bavaria. See last page.

* I think it probable, that the trunks and branches of trees were often used in making the *vallum*. This would account for the frequent diminution of its size and the depression of its form, in places remote from human occupation.

In the Pfahlbronner wald, north of Lorch, Wurtemburg.

North of Butzbach, in the Wetterau, Hesse-Darmstadt.



At the deep cutting of the Main-Weser Railway, Hesse-Darmstadt.

North of Butzbach, near the two last sections.

The Ditch, where it is visible, is uniformly on the eastern or German side of the vallum. It must have been originally much deeper than it is at present; for the growth of grass, plants, and shrubs, with the action of rain through many centuries, must have made it continually more and more shallow. But, as in long districts, even where we see the *wall*, we can perceive no traces of a *ditch*, and as I am of opinion that the wall was not by any means a universal accompaniment of the palisade, so I think it probable that in various situations the ditch was never completed. Of these specific situations, and the reasons for omitting to make either wall or ditch, I shall speak hereafter.

The only remaining portion of the *limes*, which is to be regarded as belonging to its general construction, was the series of signal stations, *speculæ*, or watch-towers. These were probably erected along its whole extent, and within the palisade. Many of them, as far as we can judge from the foundations which have been examined, were square,

and within they were about ten feet, or a Roman pole in each direction; others were round. The foundations were probably in all cases of stone: but the superstructure may have been built in some instances entirely of wood. It is probable that in form and appearance they resembled the watch-towers on Trajan's Column. See *Plates* 2, 3, and the annexed woodcut.

We here see three towers erected upon the bank of a river. They are two stories high, and round the upper story is a wooden gallery. A burning torch is placed in the gallery of each tower, proving that it was a watch-tower, in which two or three soldiers were placed as sentinels.

FROM THE COLUMN OF TRAJAN.

In another part of the same column, (*Plates* 52, 53, reduced in the following woodcut), we see four square towers, also in a row, with intervals between them, and only

FROM THE COLUMN OF TRAJAN.

one story high. These towers are placed behind a rampart of earth. There seems no reason to doubt that similar watch-towers, or beacons, were erected along a great part of the *limes*, generally at intervals of about a Roman mile, and that the sentinels placed in them were required, in case of any hostile appearance, to give notice by displaying a lighted torch, by blowing a trumpet, by raising a column of smoke, or by some other signal,* so that the alarm might be communicated along the line, and thus transmitted to the camps and other places of greater strength.

I have endeavoured to represent the foregoing particulars, viz. the clear space, and the vallum, ditch, and palisade, with a mile-tower, in the accompanying ideal section.

IDEAL SECTION OF THE LIMES.

In addition to the provisions which I have mentioned as the essential parts of the *limes*, or its general accompaniments throughout its whole extent, I must now refer to the means of defence adopted in mountain passes, or other places of a peculiar description. Some of these will be more especially noticed hereafter; but I refer to them here because the German antiquaries have asserted that there remain lofty towers of Roman construction, which belong to the *limes*, and were erected in the form in which we now see them, to defend the empire against the incursions of the native tribes. These towers are found not only upon the *limes*, but at considerable distances from it. They are, with few exceptions, either square or round.† They are about twenty feet wide, eighty feet high: the only entrance twenty feet from the ground, the walls of great thickness, the interior above the entrance divided into three or four stories, the ascent to which was commonly, though not always, by ladders. Almost the only light admitted to the

* Wilhelmi, *Zwölfter Jahresbericht*, p. 76, note 11.

† That at Sternsberg, the description of which follows, is octagonal.

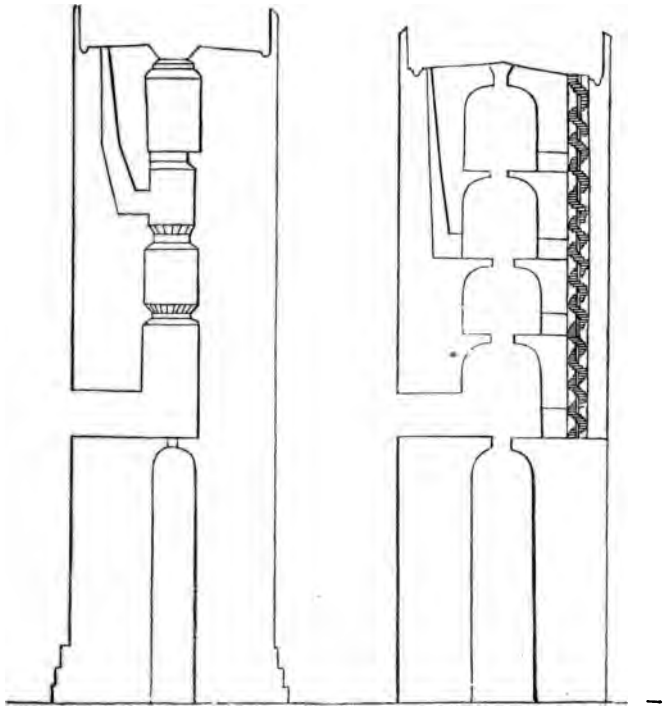
chambers was from above. The wall inside and out is faced with hewn stones, except that, on the outside, the stones, which are of great size, are chiselled round the border only, the part within the border projecting in large rough unhewn bosses, so that the building exhibits a kind of rustic. Between the outer and inner faces of the wall there is said to be a kind of grouting, or *fartura*, made of excellent mortar, in which are laid small unhewn stones.

One of the most remarkable towers belonging to this class is that of Sternsberg, near Sinsheim, in the Grand Duchy of Baden. By its size, its form, and its position on the summit of a basaltic hill, it arrests the attention of every one who travels along the ordinary road from Heidelberg to Heilbronn. It has also engaged the attention of many eminent antiquaries, in consequence of its great strength and remarkable construction. Some archæologists of great note have maintained that it was built by the Romans. Their arguments have been accurately examined, and the question, I conceive, has been set at rest by Wilhelmi, the excellent Dean of Sinsheim, who regards it as the keep of a German castle erected and maintained in the middle ages. This tower, which was beyond all comparison the strongest and most impregnable, as well as the loftiest part of the castle, was intended to afford the means of making observations, and perhaps signals from its summit; of preserving in safety money, jewels, and other valuable commodities; and of saving the possessors and defenders of the castle in cases of extreme danger.* The section of the building will give an idea of its strength, and at the same time will show how completely it differs from anything Roman. See the left hand figure in the following woodcut.

My late tour into the South of Germany afforded me an opportunity of examining two more of the so-called Roman towers at Besigheim, a small town on a rocky promontory at the junction of the Ens with the Neckar. These two towers are round, and exactly similar in their construction. They are at the opposite ends of the town, and have been portions of two more extensive fortified abodes, or castles.

* *Zwölfter Jahresbericht an die Mitglieder der Sinsheimer Gesellschaft*, &c. *von* Karl Wilhelmi, Sinsheim, 1848, pp. 45—83. The tower of Sternsberg has been more recently described in the publications (in folio) of the Archæological Society of Baden.

The annexed section (see right-hand figure in the woodcut) will give an idea of the general construction of these towers, in which the chief peculiarity is, that an excellent spiral staircase, built in the thickness of the wall, leads from the door to the upper stories and to the roof. One of these towers is not far from the river; and the well built below the chambers may have served to obtain a supply of water.



SINSHEIM. BESIGHEIM.

SUPPOSED ROMAN TOWERS.

The other is on a limestone rock of considerable elevation, and therefore the supply of water must be supposed to have been obtained in some other way. These towers are built of limestone, and the marks of the chisel upon them are so fresh and sharp, that they seem not more than one hundred years old. The access to the door of the higher tower is still by a wooden bridge, which connects it with an ancient building now used as a prison. Although the

construction of these towers, with their five vaulted chambers and spiral staircase, implies great skill in the builder, it is only necessary to think for a moment of the cathedrals of Cologne, Fribourg, Mayence, and Strasburg, and of innumerable other medieval edifices, in order to perceive that the sovereigns, the nobility, and the landed proprietors of those times were as well able as the Romans to erect such structures whenever they chose to go to the expense, and to avail themselves of the services of contemporaneous builders and architects.

Having occasion, in the year 1850, to pass through Vach, a small town situated on the Werra, and on the borders of Hesse Cassel and Saxony, and finding in Mr. Murray's excellent Hand-book a notice of the striking resemblance of the four towers of Vach to the round towers of Ireland, I thought it my duty, as a member of the Archæological Institute, to examine one of them. They evidently belong to the same class of structures as the so-called Roman towers which I am now discussing. One of them, which I particularly examined, is remarkable for the preservation of its summit, which is a vault of stone, terminating on the outside in a cone.

Another supposed Roman tower is that at Donau Stauf, a village on the Danube, a few miles below Ratisbon. It is circular, 60 feet in diameter, the wall being 15 feet thick, and the space inside 30 feet in diameter. An oil-painting by Mr. Scharf, of London, reduced in the following woodcut, represents with great exactness the peculiar appearance of the masonry.

With respect to the origin of these towers, I should not think it becoming in me to speak positively, if I found that the German antiquaries were agreed upon the question. I should be disposed to defer to the opinion of men of so great learning, and of so long and extensive observation; but, finding that they are ranged on opposite sides, I venture to take a part in the dispute, and to say that, so far as my knowledge enables me to judge, I should as soon consider a Chinese pagoda to be Roman as one of these towers. I know of nothing, certainly Roman, that can be compared to them. They appear to me to indicate not only a different style of building, but a different state of society. The Romans had a most extensive and well-

organized government, and defended themselves by cohorts and legions, which marched and fought together, and entrenched themselves in camps or cities. These towers were evidently intended for that state of society, in which clans, tribes, or nations of diminutive extent were led on by chiefs, who defended themselves against one another, or

TOWER AT DONAU STAUF, FROM A PAINTING BY SCHARF.

against marauding hordes of Huns, Magyars, and Northmen, by shutting themselves up in their castles, and resorting to the keep of the castle, when pressed to the utmost. Hence towers of this kind are to be found, not only in most parts of Germany, but in Switzerland and Italy; and in

many cases records are not wanting to show when and by whom they were erected.

But although I cannot consider these towers as Roman, yet I have no doubt that they were often raised on ground which had been occupied by the Romans. Along the *limes* various sites may be pointed out, which were in the highest degree important for the defence of passes through the mountains, of bridges over rivers, and of other remarkable situations. In all ages they must have been regarded as positions requiring peculiar provisions; and I therefore believe that the towers which now stand upon them, though not Roman, were a later superstructure, raised in many cases upon Roman foundations.

Having offered these general remarks, I now proceed to trace the *limes* along its course, beginning at the Danube. It commences on the western shore of that river, at no great distance from Ratisbon, and half way between the villages of Stausacker and Hienheim.

Its course through South Bavaria is partially delineated on the four sheets, numbered 45, 46, IV, 54, of the great map executed by the general staff, under the direction of the Bavarian government. It is described by Dr. Anthony Mayer in four Memoirs, published in the Transactions of the Royal Academy of Munich. The most remarkable peculiarity of Mayer's account appears to me to be his frequent notice of the supposed signal-stations. He finds all along the line, at pretty frequent intervals, heaps of earth and stones upon the *limes* itself, surrounded by a circular ditch. From his description, they appear to be what we should call barrows; and in some instances he appears to doubt whether they were not places of sepulture. He, however, commonly gives it as his opinion that the circular ditch, which is for the most part about twenty feet in diameter, surrounded a palisade, and that within the palisade was a tent made of hides or leather, adapted to be the abode of ten soldiers, who were placed under the command of a *decanus*, or dean. Thus he regards all these positions as the sites of *contubernia*, designed for the protection of the *limes*. Some of them are indicated near its commencement on the great Bavarian map. Mayer concluded that not towers, but tents, had been erected on these sites, because he never found in them traces of masonry. It is to be

observed, however, that besides these supposed tents, or *contubernia*, he found in a few instances traces of square towers, resembling the beacons, which existed further towards the west.

Wherever the wall, *i. e.* the *agger*, or *vallum*, remained, it was evidently made, according to Dr. Mayer's opinion, by collecting the earth and stones which lay near, and heaping them on the original surface of the ground, so as to form a mound ten feet wide at the base, and three or three and a half feet high. In opposition to the representation of those who described the *limes* as a wall regularly built of stone, he thus expresses himself in the first of his Memoirs, published in 1824:—

"I have dwelt on this landmark sixteen years. I have not only taken walks upon it, but travelled over it times without number. I have examined it not only in parts, but from end to end, and step by step. I have dug into it in more than one hundred places, and opened some many fathoms long. I have been present when the country people made still larger openings, either to extend their fields or to obtain materials for the lime-kiln. I have omitted no means of the most exact and complete examination; and, except at the foundations of the towers, I have nowhere discovered the base to be sunk below the surface; I have nowhere found mortar, a trace of the building of a regular wall, or a sign that this bank was more than three or four feet high."

In the first part of its course, near the Danube, Mayer found the wall to be accompanied by a ditch at the distance of seventeen paces, and always on the north, or German, side of the wall. He supposes the palisade to have accompanied this ditch close beside it, and he says that he found no traces of the ditch further west than Kipfenberg.*

In pursuing its course through Bavaria, the *limes* crosses the Altmühl twice, viz. at Kipfenberg and Gunzenhausen. This river, in regard to size, force, and picturesque accompaniments, may be compared to the Derwent in Derbyshire, or to the various rivers in the West Riding of Yorkshire. The *limes* also crosses many smaller streams which intersect

* According to Mayer, the length of the wall was from Kipfenberg to the road near Ellingen (II. 42), 21 Roman miles; from that road to Klein Lollenfeld (III. 296), 16 Roman miles; from thence to the border of Bavaria (IV. 26), 17½ Roman miles.

the high ground, for the most part covered with primeval forests, over which it is conducted. In these situations its construction must have been modified according to circumstances. It is probable that the palisade went down the steep bank on each side of the valley in its ordinary form. It may have been accompanied by a wall, or mound of earth or stone, wherever the bank was not too precipitous. The formation of a ditch by the side of the wall seems doubtful; because it would have become a water-course, subject to continual change in its depth and its form, and liable to endanger the palisade and wall, instead of protecting them. But how would the *limes* be conducted across the alluvial plain, which formed the bottom of the valley? A mound of earth and stones would be subject to be destroyed by floods; a ditch would soon be filled with *débris*, and effaced; a palisade fixed in the usual way would present an impediment to great masses of drift-wood, which, without proper precautions, would overturn and destroy it; also the floating masses of ice, which are seen in every river of Germany on the return of spring, would sweep away the strongest defence of this nature. It appears to me, therefore, that the Romans must have had recourse to the same expedient which is still adopted everywhere by the Germans, who, before the approach of winter, take up their mills, wooden bridges, and boats, and deposit them on dry ground, until the rivers covered with ice have broken up, and subsided again on the return of spring. In short, in these situations the palisade and the bridges connected with it must have been moveable. In reference to this question, I again refer to the column of Trajan.* We here see a rapid stream crossed by a wooden bridge with a palisade at each end (Pl. 49, 50), a tower adjoining the palisade, and a wall of earth or stones beyond. See the following woodcut.

Supposing this moveable palisade to be placed across the valleys, it would complete the boundary. It would prevent the straying of cattle and of game, a benefit which will appear very important, if we consider that, according to the testimony of Tacitus, the flocks and herds of the Germans were very numerous, and constituted a great part of their

* Plates 15, 16, 18, 49, 50, 88.

FROM THE COLUMN OF TRAJAN.

wealth. The same must have been the case with the Roman legionaries and other settlers. The forests, no doubt, abounded with boars, deer, and other wild animals, important to the inhabitants on both sides of the *limes*, not for pleasure only, but for subsistence. A modern writer, Döderlein, mentions that at Gunzenhausen the game, when pursued, used to escape along the river on the foundation-stones of the walls. It is evident that the owners and pursuers of these four-footed tenants of the forests would be induced to pass the boundary times without number, unless the transgression of it by the lower animals had been prevented, and that innumerable quarrels would hence arise. Such natural passes as these would also require protection against more systematic attacks. Leaders like Arminius, followed by thousands of brave, impetuous, patriotic Germans, eager to avenge and repel the aggression of the Roman legions, would necessarily endeavour to force their way along the valley. We cannot hesitate to conclude that the Romans would provide extraordinary means of defence in these positions; nor are the indications wanting that they took these precautions.

As we approach Kipfenberg from the south, having left in the valley the villages of Pfintz and Böhming with indications of Roman origin, we pass under the extensive ruins of the mediæval castle of Arnsberg, including a strong tower, which is supposed by many to be Roman. Proceeding onwards, we find the declivity of the hill intersected by a series of mounds and ditches, which certainly appear to be of Roman origin. At the bottom of this declivity is

the small glen called the Birkthal. We cross this hollow, and ascend the steep hill, which is crowned by the castle of Kipfenberg with its square tower, 22 feet wide, and about three times as high, with the entrance about 25 feet from the ground, supposed to be Roman, and adjoining the *limes*. Both of these castles are placed so as to command the valley, and their possession must have been necessary to guard the territory within the *limes*. I cannot doubt, therefore, that these fine castles had a Roman origin, although I do not agree with those who say that the keep of each castle was built by the Romans; because the style of their architecture, the only argument adduced to prove this opinion, seems to me adverse to it rather than favourable.

When I visited Kipfenberg last May, I was put under the guidance of the schoolmaster. He showed me in his garden the remains of a small round tower, which he supposed to be Roman. It is in the line of the *limes*, not far from the eastern or right bank of the river, and I think it highly probable that it was connected with the series of moveable palisades and bridges, which went across the plain and joined the opposite declivities. Probably a guard or sentinel was always present in this tower.

Whilst I see no reason to agree with Dr. Mayer in supposing the square keep of the castle at Kipfenberg to be Roman, I have the pleasure of assenting very cordially to the following observations, which he introduces in his account of the *limes* (III. 290), where it crosses the Altmühl the second time, viz. at Gunzenhausen; and I think the same opinion might be advanced whenever we find an inhabited place upon the *limes* in a similar situation:—

"He who thinks, that no Roman building occupied the present site of Gunzenhausen, may enjoy his belief. I believe it not. To leave the point where the boundary crosses the Altmühl without defence, and even without the means of observation; the productions of the wide-spreading fields and pastures, which, in the vicinity of troops dispersed in various directions, were requisite both for man and beast, without barns and storehouses; and the pleasant valley, so bountiful in supplying all the necessaries of life, without inhabitants, or the inhabitants without houses, would have been an oversight, which I cannot impute either to the founders of the boundary, the emperors Hadrian and

Probus, or to the curators, legates, and præfects who were set over this district. All Roman buildings and their remains have vanished: they have given way to the new town. Only the foundation of the dungeon is regarded by some persons as a Roman work; and if this tower was really erected by the Romans, its situation proves that it was well adapted to protect the passage of the Altmühl."

In following the course of the *limes* through Bavaria, we are not able to identify any places with ancient towns or cities, as in Northumberland we prove, for example, the identity of Chester with Cilurnum, and of Newcastle with Pons Ælii. Also, no inscription has been found upon the wall. Nevertheless, we find abundant traces of Roman occupation, even though we give up two or three strong imposing keeps of mediæval castles.* Besides the constantly recurring circular ditches, which Dr. Mayer supposes to have been the sites of *contubernia*, there are the foundations of the square beacons, or watch-towers, of which I have already spoken. There are also traces of stone towers considerably larger than these. There are mounds, apparently designed for encampments, and others, such as those between Arnsberg and Kipfenberg, for the defence of certain important posts. Fragments of Roman pottery, instruments of iron and bronze, and remains of images or figures of different kinds, have been found in sufficient quantity. Near Erkertshofen to the north of Eichstädt, where there is a considerable quantity of bog iron-ore,† which was formerly smelted, Mr. Mutzl, the Rector of the Gymnasium at Eichstädt, discovered, in 1847, the remains of a Roman smithy with a large quantity of horse-shoes and agricultural implements, some of them apparently in an unfinished state. He was so kind as to give me one of these implements, a *sarculum*, or hoe, which I have now the pleasure of exhibiting. Not far from the same spot Dr. Mayer (II. 20, 21), opened, in 1829, a Roman barrow, and found in it a small structure of stone, containing burnt bones, a lamp of terra-cotta, a lacrymatory, and a silver coin of Antoninus Pius. This,

* Kipfenberg is the only pretended Roman tower, still existing, which is actually on the *limes*. *Altmanstein* is a little to the North of it; Arnsberg is directly to the South of Kipfenberg, and was no doubt connected with it, as I have explained. All the rest of these towers are a long way from the *limes*.

† See Mayer, II. p. 25; and map of the general staff.

consequently, was the sepulchre of an officer of the Roman army. On the same authority we learn (III. 280, 281, Plates), that at Theilenhofen, among other abundant remains of a Roman Colony, coins were so common, that the boors used actually to pay for their beer in Roman money.

I shall take my leave of Dr. Anthony Mayer, by quoting the concluding paragraph of his description: "How warmly did my heart beat," says he, "when on the boundary, which separates the two kingdoms (of Bavaria and Wurtemburg), I threw myself upon the moss under the lofty rustling trees and reviewed the hardships, the dangers, and the joys, which I had met with on my antiquarian pilgrimage from the shore of the Danube to this spot. What heartfelt thanks did I return to the good God, that amid the numerous and pressing labours of my calling, and in my very advanced age, he had enabled me to present to the students of archæology correct views of that beautiful monument of Roman skill, concerning which so many falsehoods had been trumpeted abroad."

Our principal guide for some time after we leave Bavaria and enter the kingdom of Wurtemburg is Professor Buchner,* the accuracy of whose description is attested by Mr. Paulus, the state topographer.† We may also trace the *limes* throughout the whole of this kingdom upon the excellent map made by the general staff with the assistance of Paulus; and as this map is constructed upon the same scale with that of Bavaria, viz. $\frac{1}{50,000}$ of the linear distance, or, in other words, one millimetre to fifty metres, we may calculate the actual distances in every part of the line with the greatest facility.

Referring to the map‡ for the direction of the wall in this interval, I shall only observe, that it has the same appearances and the same indications of its former use as before, except that in the opinion of Paulus it was intended, for some space after entering Wurtemburg, to be used as a road. Many parts of it are now used as roads, forming a communication between one village and another; and this is also to a certain extent the case in Bavaria. Nevertheless, we must be on our guard, as Mayer repeatedly warns us, against considering this *vallum* as a great military road,

* *Reise*, II. 16—48. † *Würt. Jahrbuch*, 154. ‡ See p. 97.

specially designed to convey the Roman legions from one camp or city to another. But I think there can be no reasonable doubt, that, whenever the soldiers who guarded the line, or any persons connected with them, had occasion to go from one camp, beacon, or signal-tower, to another, either on foot, or horseback, or in carriages, they found the *vallum*, where it existed, very convenient for their purpose; and it should be added, that, according to the observations of Paulus, special provision was made for this object in that portion of it which lay between the border of Bavaria and Lorch.* Moreover, there is reason to think, that many of the villages found upon the line originated in camps, or other settlements, made by the Roman legionaries.

Lorch, the town at which we have now arrived, was probably the site of a Roman settlement called *Laureacum*. It is a point of great importance in the history of the *limes*, which, after pursuing a general direction from the East towards the West, here turns at a right angle and takes a course directly North. This is also one of the most celebrated spots in early German history. The abbey of Lorch, now principally converted into farm-buildings, occupies the projecting point of a precipitous rock of limestone, which overlooks the beautiful valley of the Rems. The fortifications by which it was surrounded still remain, forming a crest around the summit of the hill. These structures ought, I think, to be regarded in the same light as those in Bavaria, of which I have already spoken. They are mediæval buildings, but erected upon a Roman foundation; and I hold this opinion upon the grounds before stated, thinking that the Romans would of necessity occupy so important a post, overlooking a tract of fertile land, and situated at an angle of their great boundary-line. This rock, so adapted by nature for the purpose, they undoubtedly fortified and made it one of their strongest positions.

On referring to the map, we perceive that the wall goes directly northward to Pfahlbronn. Here we have a good illustration of the remark, which I formerly made, that the wall was generally conducted on the high ground and along the water-shed. For in this stretch of five or six English miles we observe a declivity on each side of it. It

* *Würt. Jahrbuch*, 154—156.

goes as if it were on the ridge of a roof, the water flowing on each side downward, so as to be carried off by the brooks and discharged into the Rems. In any other situation the wall would have become an impediment to the water, which would have accumulated, made numerous breaches in it, and in the course of ages would have carried it away.* Here the ditch is very distinct on the Eastern, or German, side of the wall.

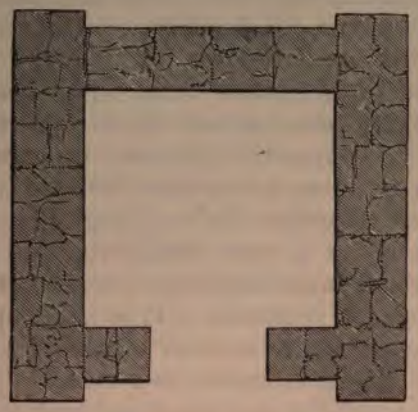
According to the accounts of Buchner, Paulus,† and Hansselmann, the mound in its course northward to the boundary of Wurtemburg becomes much more considerable in its dimensions. Along this portion we find no trace of Dr. Mayer's tents or *contubernia*, but at intervals of a thousand paces, or about a Roman mile,‡ we find the foundations of small watch-towers. In consequence of the regularity of their recurrence, the people have given them the name of *chapels*, comparing them to the small shrines with altars, which are so commonly found in Catholic countries along the tracts leading to noted sanctuaries. These towers were square, and about fifteen feet in each direction. The following plan of one near Murhardt, drawn by Paulus according to his own measurement, gives a good idea of their general form. We also find traces of encampments, and several existing towns or villages, viz. Murhardt, Mainhard, Welzheim, Oehringen, and Jaxthausen, which evidently succeeded to small Roman settlements, inasmuch as abundant remains, including the foundations of houses, with their hypocausts, altars, and even monumental inscriptions, are found on these sites.§ A mere glance at the

* It has been already observed (Note, p. 97), that the wall of Antoninus Pius in Scotland was differently constructed. It often passed along a declivity so as to intercept the water. To prevent its destruction, drains were made across it. They were formed "of blocks of squared freestone, laid in parallel courses, with similar blocks resting across them at the top."—R. Stuart's *Cal. Rom.* 2nd edit. pp. 282, 316, 321.

† *Würt. Jahrbuch*, 157.

‡ In this respect, the beacons on the German *limes* agree with the mile-castles on Hadrian's Wall, in the North of England. Both were thus guarded at the expense and by the care of the hereditary owners, and according to the rule, which is laid down in the treatise *De Rebus Bellicis*, appended to the *Notitia* (Geneva, 1623, p. 39). In a short chapter *De Limitum Munitionibus*, the author says, "Quorum tutelæ assidua melius castella prospicient, ita ut *millenis interjecta passibus* stabili muro et firmissimis turribus erigantur." A rock near Hadrian's Wall still bears the inscription, PETRA FLAVII CARANTINI. Probably this Flavius Carantinus was one af the hereditary proprietors of the *Fundi limitrophi*, mentioned above, p. 100, and used this his quarry to keep in repair his portion of the wall, with its camps and beacons.—See Bruce's *Roman Wall*, 2nd edit. London, 1853, pp. 63, 139.

§ Hansselmann, Tab. XI., has published a plan of Jaxthausen and its vicinity, which



PLAN OF A MILE-TOWER NEAR MURHARDT.

map of Germany will show the coincidence of this part of the *limes* with the remark of the Roman historian, who says that the Emperor Probus "removed those of the Alemanni who did not unite with him *beyond the river Neckar.*"*

After leaving Wurtemburg the *limes* has to pass a small projecting portion of the Grand Duchy of Baden, through which its course is traced by Hansselmann (§ 61), Buchner (II. pp. 68—70), and Steiner (pp. 279—286). It crosses the Main a little below the old fortified town of Freudenberg, and enters the district called the Spessart, which is in the northern part of Bavaria, and is a high region nearly covered with forests. The *limes* here seems, as usual, to have followed the water-shed, to have crossed the small river Kinzig, between Gelnhausen and Wirtheim, and to have entered Hesse.† The trace of it is here lost for some extent; and it must be confessed that, throughout the whole distance from the kingdom of Wurtemburg, where we saw it finely displayed at Jaxthausen, we must remain uncertain respecting its exact course, until the Bavarian Government has pursued its survey and the publication of its map to this portion of its territory.

is remarkable in several respects. His bird's-eye view of the *agger* (see p. 106), so far as I know, is the only pictorial exhibition of its form that has yet appeared. It here crosses the plain beside the river Jaxt; in all other cases it disappears when the *limes* has to be conducted across a river.

* Reliquias ultra Nicrum fluvium et Albam removit.—Vopisci *Probus*, c. 13.

† See Steiner, pp. 120—123, 264—286, and his map.

We resume the inquiry with great satisfaction under the guidance of Professor Dieffenbach of Friedberg, who has pursued it in his own vicinity. The map of Hesse-Darmstadt, executed on the same scale with those of Bavaria and Wurtemburg, also renders most important aid. In this part of its course the Romans conducted the *limes* in such a direction as to include the rich and beautiful district of the Wetterau. By so doing they retained possession, not only of a very fertile region, covered with orchards, pastures, and corn-fields, but also of the important salt-springs of Nauheim. It is not improbable that these springs, as well as various others of a similar kind, had been used by the Germans as a source of revenue even before the arrival of the Romans,* and ever since that time they have been regarded in the same light by the successive occupants of the soil. The Romans, therefore, probably assumed the management of these *salinæ*, and, when compelled to leave the country, relinquished them again to the native governors.

Near the point where the *limes* is again distinctly traceable on the property of the Prince of Solms-Braunfels, at Gambach, near Hungen, a remarkable discovery was made in the year 1802, viz., the remains of a Roman smithy and foundry, including lumps of metal, a bronze celt, various weapons, utensils, and vessels, with the horns, teeth, and bones of quadrupeds.† I saw the *agger*, and in some places the ditch, to great advantage in the portion which encircles the Wetterau; more especially because part of it here belongs to the before-mentioned Prince of Solms-Braunfels, who lives near, and preserves it from the destruction to which it is exposed in the hands of more greedy and short-sighted proprietors. I took a sketch to show its section, where it has been cut through by the Main-Weser Railway. (See the preceding woodcut, p. 107.) Near this spot there remained till lately a ruined tower, larger than usual, called *Der Stumpfe Thurm*, at the corner of the wood, where the *agger* makes an angle.‡

Another very important and conspicuous portion of the *limes* is that where it forms the boundary between the

* Salinarum finiumque causâ Alamannis sæpe jurgabant (*Scil.* Burgundi).—Amm. Marcellinus, Lib. XXVIII. c. 5.

† Dorow, II. pp. 34—40.

‡ Dieffenbach, p. 146.

Duchies of Homburg and Nassau, passing nearly along the crest of the Taunus mountain, but on its northern declivity.*

On its southern side is a rectangular camp, called the Saalburg, supposed to be the Ἀρταυνον of Ptolemy. Its dimensions are 280 paces by 180. Here many very remarkable Roman antiquities have been found, and the Roman way is distinctly discovered, which connected it with the greater settlements.†

Whilst I was engaged in writing my account of this part of the *limes*, I had the pleasure of receiving a letter from our secretary, Mr. Way, informing me that he had visited Saalburg; and I am happy, with his permission, to quote the vivid description of his excursion. Besides being instructive in other respects, it shows us something of the difficulties which attend these explorations:—

"I ascended one of the chief heights nearest Homburg, hoping to catch the ditch upon the crest of the hill in the Wald, where I thought it would be undisturbed by spade or plough. I failed in finding the ditch, but I gained a glorious view along the north flank of Taunus, and a vast expanse of country towards Ems. I suspect the Graben here falls considerably below the crest of Taunus; but I failed in finding it, although I made several downward explorations, to the peril of my legs, amongst piles of loose basalt; and, as far as I can see in the maps, the ditch is in fact carried on the north side of the range, considerably below the crest of the higher parts of the hills. I was almost in despair, and set my face towards the station, which is admirably placed in the only weak part of this portion of the chain, a pass which is the lowest part hereabouts, and over which the road passes to Usingen. With the instinct, however, which favours a determined investigator, I espied by the side of the track which I had chosen, what appeared to me to resemble a rampart with a ditch beneath it, and, plunging into the jungle of beech copse, I was rejoiced to find myself actually in the Graben. It is very perfect, and I followed it for more than a quarter of a mile in its course westward towards *Artaunum*. The ditch is so smothered up with brushwood, that no one would

* See the government map of Hesse-Darmstadt; also the maps of Ulrich and Von Gerning.

† Trapp, pp. 38—43.

suspect its existence. I regret much that, as night was coming on, and a thunder-storm threatened, I could not follow its course backwards, to see how it runs along the north flank at a lower level than the crest of the ridge. Where I followed it, the ditch followed the highest ground of that part of the hills. I had great difficulty in obtaining a sight of its general outline, so completely is it overgrown.

This sketch gives its appearance looking nearly due east, about half a mile from the road to Usingen, where it passes the chain, near the site of the station (Saalburg). I took the gross measures as well as I could, as follows:—Depth of the foss below the natural level of the soil (*outside* the ditch), about 3 feet; width of the foss, about 6 feet; face of the embankment, 18 feet. Rampart on the summit of the embankment, about 4 to 6 feet. On this I conclude the palisades were fixed. This part of the work seemed to be formed just on the fall (externally, or towards the north), but on the highest part of the hills, as before observed. The work was obliterated where roads had been cut through the wood, and I could get no section. I could not trace it near *Artaunum;* but I believe it runs to the

north of that station some little distance. All the posts are of course within, or (in this part) south of the Pfahlgraben. The station is a large and important work of oblong form, with a very strong vallum and foss. I am sorry I could not pace the measurements. It would hold some thousands of men, and was admirably placed to protect the pass, the only place hereabouts where the Chatti might have easily effected a raid. In this station was dug up the inscription now built into the wall of the round tower at the castle of Homburg."

Two other camps or forts, very similar to the Saalburg, are found at no great distance from it, one, called Capersberg, to the east, and the other to the west, at the foot of the Klein Feldberg.* At this latter point rises a brook, called Weilbach. It intersects the *vallum*, and it is remarkable that the Romans seem here to have sacrificed safety to convenience; for it must have been highly important to secure in this way the use of a fine spring of water close to their camp.

After leaving Taunus, the *limes* pursues a course directly west as far as Kemel, and then turns towards the northwest, and preserves a general parallelism to the Rhine, until its supposed termination opposite Cologne, or perhaps still further northward. For the minute exploration of it to the north of Wiesbaden we are indebted to the Messrs. Habel, father and son, who removed the soil and herbage from the foundations of the small square towers, so as to demonstrate their reality and their situation. The portion where this examination was instituted was rendered interesting by the discovery of a bronze capricorn, now preserved in the museum at Wiesbaden. The present Mr. Habel has explained everything pertaining to it in a very learned dissertation, and has shown that it belonged to a standard-bearer of the Twenty-second Legion, who, being compelled to flee, probably buried it for security where it was discovered a few years ago. This supposition is illustrated and confirmed by a previous discovery near Erbach in the Odenwald, not far from the *limes*, of an eagle of bronze gilt, which had no

* See Ulrich's map. Römer, p. 88. Winkelmann observes (p. 129), that, where there is a pass, we find a *double* ditch and wall so as to inclose a space, in which the Romans had a stronger force to guard themselves from the incursions of the Chatti.

doubt belonged to a standard of the same legion, and was deposited in a hollow in the ground, and covered with small stones.*

I cannot leave the rich and populous portion of the Roman territory, which lay between the *limes* and the river Main, without adverting to the multitudes of curious objects which remain to attest the former dominion of its Roman occupants: roads, camps, villas with hypocausts and beautiful mosaics; bricks, stamped by the legionaries who made them; weapons and instruments of iron; altars, monumental inscriptions, terra-cottas, coins, and bronzes without number. These have been found at Saalburg, as already mentioned, at Vilbel, Hattersheim, Heddernheim, Wiesbaden, Cassel, and Eltville. When the workmen were lately engaged in making the station for the railway at Cassel, they discovered the fragments of a pair of bronze folding-doors, most beautifully ornamented. These fragments are preserved in the museum at Mayence. The same excavations brought to light another most precious relic of Roman taste, the so-called *Sword of Tiberius*, which I the rather mention, because through the kindness of its owner, Mr. Farrer, it is now displayed in our temporary museum. A mere glance at such objects as these is sufficient to convince us of the high state of cultivation which the Romans enjoyed even in these remote parts of their great empire. A very remarkable and interesting circumstance is the frequent recurrence of Mithraic emblems and altars. Through the kindness of Dr. Römer of Frankfort, I am enabled to show an accurate cast of one of these monuments. Among the legions and cohorts settled in this district were several which had been recruited in Egypt and in Asia; and in this monument we have a striking assemblage of symbols, which seem to refer to various oriental modes of faith and worship. Thus we find here the Egyptian *sistrum*, used in the worship of Isis; the Persian Mithras, represented by a head encircled with rays; and Jupiter, as worshipped in some parts of Asia Minor; for the *bipennis* is the attribute which he bears as the Jupiter of Labranda; and the circumstance of being placed upon a bull indicated the rites practised at Doliché, another town of Asia Minor, so that, in the opinion of Pro-

* Wiener, p. 65. Creutzer, 2^te^ Abhandlung.

fessor Creuzer and Dr. Römer, he is here to be recognised as *Jupiter Dolichenus.**

If I were to attempt to pursue the *limes* further north, my description would be little more than a list of names. I shall only mention, as a hint to English travellers who frequent the Brunnens of Nassau, and may be glad to know of some worthy object of inquiry, that the *limes* passes by Schwalbach and Bad-Ems. After leaving the Duchy of Nassau it enters Rhenish Prussia, includes the Roman city of Victoria, now called Nieder Bieber, then passes to the east of the Seven Mountains, and terminates at Deutz, opposite Cologne. This, at least, is the opinion of most German antiquaries; but it must be observed, that some few prolong it into Holland, and make it terminate on the Rhine, at Wyck de Dunnsteede.† So far as I have been able to discover, they merely give this as their opinion, but produce no statements whatsoever of the appearances of the ditch and vallum, or of the places near which it passed.

In composing this imperfect account, I have often compared my labour to that of a geologist, whose study is to make out a complete ichthyosaurus from disjointed bones, which he fits together according to known or existing types. Notwithstanding the apparent paucity of his materials, no qualified judge doubts the accuracy of his conclusions. He is able to clothe the monster with skin and flesh, to exhibit its form from the snout to the extreme vertebra, and to show how it seized its fishy prey and pursued its pastime in the water. In like manner we are able to reconstruct the great *Limes Transrhenanus*, to imagine the portions of its *agger* complete, in their original form, and only covered with the green grass and the soft moss; the palisade extending in one unbroken but circuitous line over a great part of Europe, through extensive forests, and across hills and valleys; the cleared land carefully preserved from the fresh growth of timber; four or five hundred places, manned with soldiers, and these soldiers employed not only in discharging the duties of sentinels, but engaged in the more agreeable tasks of colonists and settlers. Sometimes they

* Altars to Jupiter Dolichenus have been found in Northumberland, as well as in the district of the Rhine. See Bruce, *Roman Wall*, p. 378.

† Von Gerning, *Heilquellen am Taunus*, p. 273. Römer, p. 87.

chase the stag or the timid roe, and sometimes defy the bristling boar. Their most common employment is to cultivate the ground, and to tend their flocks and herds. The repair of the beacons, forts, mounds, and palisades, also demands attention; and for these purposes they have in the army workmen of all descriptions. Villas and farm-buildings rise wherever they are wanted. These, their ordinary occupations, are varied, as we learn from many remaining monuments, by religious and funereal rites. The soldiers, with their wives and children, are assembled from all parts of the Roman empire, and, being joined by many of the Germans, gradually adopt with them a community of language, feelings, and interests.

The *Limes Rhætico-Transrhenanus* has been justly regarded by modern historians and antiquaries as one of the most illustrious attestations of Roman power and skill. I shall not touch the question, whether the Romans had a right to settle themselves in Germany at all. But, if this be taken for granted, I think they could not have adopted a better plan, either for their own security or that of their hostile neighbours. By this method they settled the great fundamental question of the right to occupy the soil, showing where their own claims terminated and those of the opposite parties commenced. All aggression was impeded, and the causes of frequent inroads were removed. Probably, also, as a defence against actual attacks the *limes* was in general a very effective bulwark; and thus it appears to have served, in the first place, the great purpose of preserving peace, and, if war arose, of obtaining victory.

APPENDIX.

As no general account of the Rheno-Danubian barrier of the Roman Empire has yet been given to the public, the notices of its several portions being scattered through a great number of publications, I have endeavoured in this Appendix to present in chronological order a list of all the published documents known to me, whether maps or printed treatises, which supply information on the subject. This list will explain the brief references in the preceding account.

Johann Just Winkelmann. Beschreibung der Furstenthümer Hessen und Hersfeld, vol. i., Bremen, 1697, folio, describes the course of the wall through Hesse to the Thuringerwald, tracing it from near Braubach on the Rhine to Hungen, Langen, Ulf, and Merlau.

Johannis Alexandri Döderlein *Shediasma historicum, Impp. Hadriani et Probi vallum et murum vulgò*, Pfahl-heck, Pfahl-rayn, *item* die Teufels-mauer *dictum exhibens*. Norimbergæ, 1723, 4to. pp. 75. This tract was probably the first that was written specially upon this subject. The author lived at Weissenburg in Bavaria, a very little way to the south of the wall, being Rector of the Lyceum. Thus he had the best opportunities for learning its real state, at least in his own neighbourhood.

Friedrich Zollmann. Charte von der Grafschaft Hanau, 1728. First map of a portion of the *limes*. (Römer, p. 99.)

Johannis Danielis Schöepflin Alsatia Illustrata, 1752, 1761, 2 vols. folio, vol. i., pp. 244, 245.

John Philip René de la Bletterie. La Germaine de Tacite, 1755, p. 183. Gibbon quotes the Abbé de la Bletterie as his authority, and the Abbé seems to have depended upon Schöepflin.

W. C. Buna. The maps, which appeared under this name at Frankfort and Paris about 1762, show the course of the *limes* from Schwalbach in Nassau, to the east of Friedberg and Butzbach in Hesse-Darmstadt. It is described in these terms: "Reliquiæ monumenti Romani, sive Lineæ adversus Germanos erectæ, hodieque dictæ Der Pfal. Pfol. Pol. oder Phol-Graben."

Christian Ernst Hansselmann. Beweis wie weit der Römer Macht eingedrungen, &c. Schw. Hall, 1768, folio. The author of this valuable work frequently mentions the *limes* and the various Roman remains found in its vicinity. See, more especially, sections 49—51, 55—57. In Tab. xvi. we find the first attempt to exhibit the Pfahl-graben by a map in its full length.

Edward Gibbon. Decline and Fall of the Roman Empire. Vol. i. 4to. A.D. 1776, Ch. xiii. pp. 400, 401. Gibbon, trusting to De la Bletterie, who followed Schöepflin, has given a very erroneous and exaggerated account. According to him, the emperor Probus constructed a stone wall of considerable height, strengthened by towers at convenient distances, in place of Hadrian's palisade.

Dr. E. W. Trapp; Homburg und seine Heilquellen, Darmstadt, 1837, 12mo. Brief notice of the *Limes* near Homburg.

J. D. G. von Memmingers Beschreibung von Wurtemberg. 3rd edition, Stuttgart, 1841, 8vo., pp. 5—8. An excellent general account of the *Limes*, especially of its course through Wurtemberg.

Dr. Philip Dieffenbach, Professor in the Gymnasium at Friedberg. Urgeschichte der Wetterau, in the Archiv für Hessische Geschichte, IV^{ter} Band. 1tes Heft. Darmstadt, 1843, 8vo.

Vogel. Beschreibung des Herzogthums Nassau, Wiesbaden, 1843. This author (p. 135, &c.) describes the course of the Pfahlgraben through the Duchy of Nassau.

G. M. S. Fischer. The article PFAHLGRABEN in Ersch u. Grubers Encyclopedie, Leipzig, 1845. A general account compiled from previous authors.

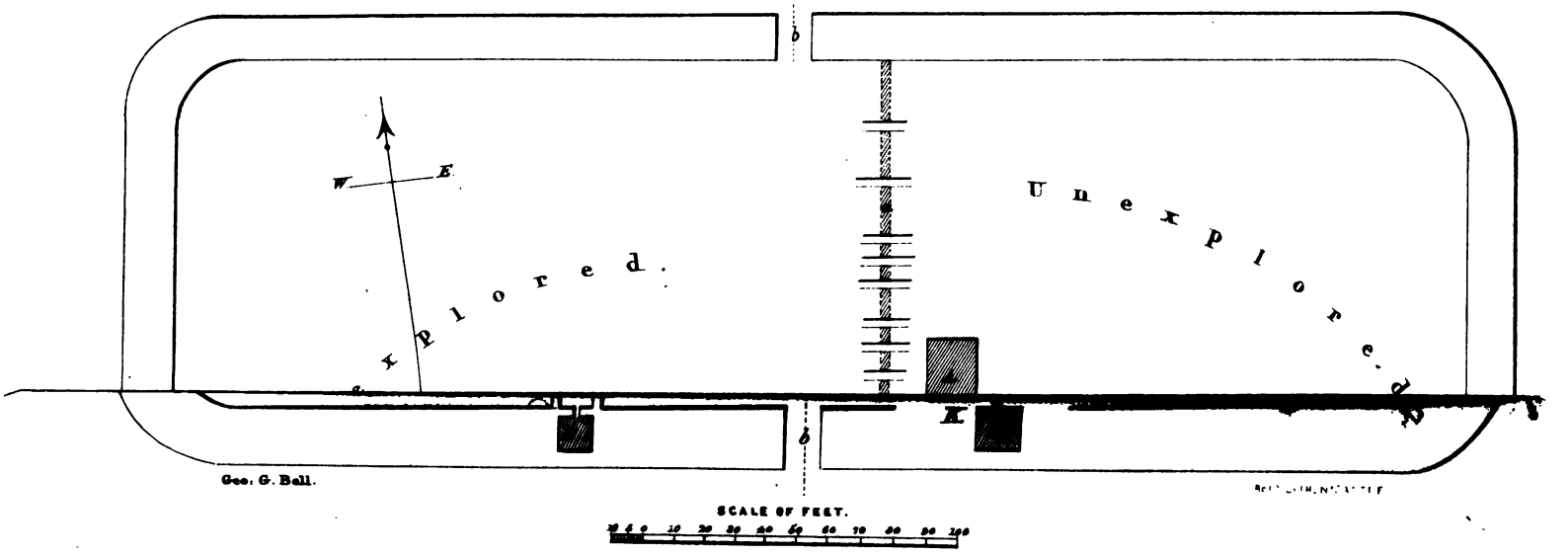
Stälin, Verzeichniss der in Wirtemberg gefundenen Steindenkmale, Stuttgart, 1846, 12mo.

Dr. Römer of Frankfort. Die römische Grenzbefestigung des Taunus, in Archiv für Frankfürts Geschichte und Kunst, 4tes Heft. 1847, p. 86.

Stumpf, Karte der Landgrafschaft Homburg, in 2 Blättern, "enthält sehr genau den Pfahlgraben in dem Taunusgebirg." Dr. Römer, in MS.

Dr. William Bell, of London, in a letter published by Mr. C. Roach Smith in his Collectanea, vol. iv., pp. 210—213, London, 1854, gives an account of the recent efforts of the German antiquaries to obtain additional information respecting the Pfahlgraben.

BREMENIUM.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AN ACCOUNT OF THE EXCAVATIONS AT BREMENIUM.

By REV. JOHN COLLINGWOOD BRUCE, LL.D., F.S.A.

It has long been a matter of regret to those who have made the Roman stations of the north of England their study, that not one of them has as yet been completely and systematically examined. Occasional excavations have from time to time been made; but these have chiefly been undertaken for the sake of the stones which they yielded, and the work of destruction has almost uniformly kept pace with that of exploration. With the view of enlarging our knowledge on the subject of Roman Castrametation, the Duke of Northumberland, the lord of the manor, and the patron of our present meeting, has ordered a complete investigation to be made of the station of Bremenium. So far as the excavations have proceeded they are of the highest interest, and have shown how little was previously known of the internal arrangements of a frontier camp. Until the whole shall have been laid bare it will be difficult to describe its general plan, or to say what have been the uses of its several parts. Some important results have, however, been obtained, and some buildings have been laid bare which exhibit unexpected features.

The camp of High Rochester—the ancient Bremenium—is situated upon the northern acclivity of the Rede-water. The course of the Watling Street has determined its site. This ancient road here passes through a gorge in the mountain range which separates the valley of the Rede from that

of the Coquet, and the station has evidently been fixed upon, in order to guard the road in this important pass. Although to one who restricts his view to the immediate vicinity of the camp it seems to stand high, and to be much exposed to the blasts of heaven, when looked upon from the mountainous elevations to the east of it, it is seen to be ensconced in a comparatively secluded and sheltered spot.

This station is situated at the extreme northern limit of the Roman power in England, and so would require to be guarded with special care.

The walls are peculiarly strong. Mr. McLauchlan states the thickness of their foundations as measuring in several places sixteen or seventeen feet. On the line of The Wall, the thickness of the curtain walls of the stations is four and a half or five feet. The walls of BREMENIUM do not consist of solid masonry, but are filled in the middle with clay. As yet, these walls have not been systematically laid bare; when they are, we shall better understand the nature of their structure, and the reason of their supposed extraordinary strength.

The masonry of them invites remark. The stones are much larger than those used in the stations *per lineam valli*. At the corners of the station, which are rounded as usual, they are peculiarly so; some of them showing a face two feet long, with a proportionate breadth and thickness. Is this massive masonry part of the original design, or is it the result of repairs? Probably the latter is the case, and probably also it will appear that at different periods the station has undergone extensive reparations. We shall better understand this when the whole of the walls have been relieved from the rubbish which encumbers them. In the parts which have already been laid bare, the walls stand five or six feet high.

The tooling of the stones requires observation. On the face they exhibit what has been called "reticulated tooling," or what the masons denominate "diamond broaching." Frequently the cutting has been done so as to exhibit wavy lines. The outer walls of HABITANCUM show the same peculiarity. In the eastern half of the Wall, usually, but, as I believe, erroneously, ascribed to Severus, we do not see this reticulated tooling. In one or two places in the curtain walls of Borcovicus, there are examples of it; but they form

the exception, and these stones have evidently been late insertions. In the western parts of the line of the Wall, this kind of masonry not unfrequently occurs. One object which will probably be gained by the laying bare of the station of BREMENIUM is the settlement of the inquiry, was this tooling peculiar to a certain cohort, or to a certain period? The stations BREMENIUM and HABITANCUM have undergone considerable repairs in the time of Caracalla, and it is not impossible that this method of dressing the stones may have been in vogue then. If we ascertain this fact we shall be able to apply it to the historical questions arising out of the examination of the Wall.

The earthen ramparts of the camp are curious. The south-east angle of it is that which is most exposed to attack, and here there is a triple line of earthwork—each rampart having an intervening ditch. One portion of these ramparts has been levelled by the operations of husbandry, but curiously enough, the traces of them remain. Last winter the lines of the trenches could easily be discovered by the rankness and strength of the wheat stubble which stood upon them.

The northern and southern gateways of the station are nearly obliterated, but still will repay examination. It has been conceived that the southern gateway has not been of the usual size, but has been a mere postern. Appearances warrant the supposition, but it must not be hastily adopted; for in no other instance in the north of England have we an example of a mere postern gate in the walls of a Roman camp.

One of the western gates of the fort has been excavated. It is a single gate, and exhibits an aperture of eleven feet. The jambs are of the usual massive character, and the southern one has the impost and the springer of the arch *in situ*.

It is highly probable that each lateral wall of the camp has been provided with two door-ways, as is the case in the station of AMBOGLANNA.

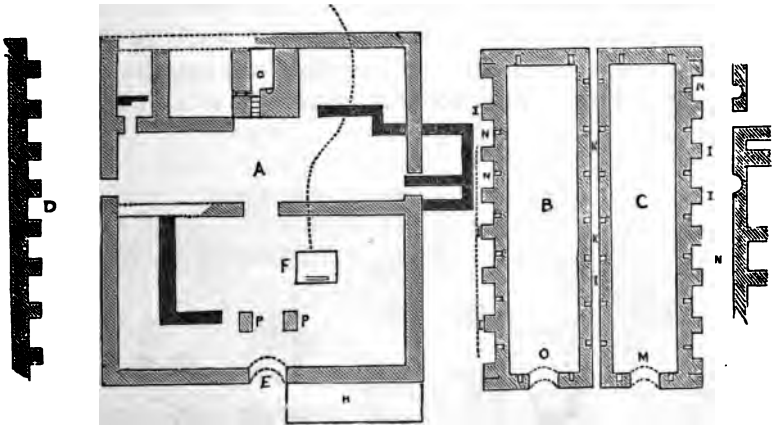
On coming within the precincts of the station, the spectator will be struck with the mass of building which it contains. No space is unoccupied; the whole area is covered with habitations, some of them of small size. A closer scrutiny will show that the buildings are not all of the same charac-

ter or age. Some of them, by the regularity and excellence of their masonry, encourage the idea that they form part of the original plan, and were erected when the station was first formed; others, of ruder structure, have evidently been built when the power of Rome was on the wane, to replace those which had yielded to the advances of time and the chances of war; others, of a still more debased character, seemingly owe their origin to the moss-trooping era. Wherever the ground has been deeply cut into, layers of wood-ashes have been found. In several places, two, and in some three, of such layers have been met with. The greatest amount of this species of deposit is generally in the centre of a building, which is just where the largest portion of a falling roof would be deposited. Probably on two or three occasions the station has been the subject of successful attack, and its domiciles enveloped in flames. The garrison, after succeeding in repelling the foe, have hastily repaired their injured dwellings without removing the previous ruins. The correctness of this conjecture is established by another circumstance. Two distinct layers of flagging, both of them much worn, and with a mass of rubbish between them, have been found in some of the dwellings and streets. This is well seen in one part of the *via principalis*, where the débris has been accumulated between the older and newer pavement to the depth of seventeen inches. Both the upper and under pavement must have been laid in Roman times, for we cannot suppose that the freebooters of the mediæval period would occupy the whole of the camp, or submit to the labour of keeping its passages in repair. The buildings of latest date, besides being very carefully constructed, are not erected in conformity with the original plan of the station.

That portion of the station which is to the north of the *via principalis* has not yet been examined. The "principal street" itself, stretching from the eastern gate to the western, has been laid bare, and the pavements of the earlier and later period, both of them much worn, have been exposed; the street is twenty feet wide. Another street to the south of this one, but parallel to it, has been met with, which runs in the direction of those points of the rampart where the second lateral gateways are supposed to be; it is eight feet wide.

Precisely in the centre of the camp (A in the accompanying plan) is a square plot of building which subsequent

SOUTH.



investigation may prove to be the *prætorium*. The portal (E) leading into it from the *via principalis* has been crowned by an arch; many of the wedge-shaped stones which composed it were found upon the ground. Advancing a few feet inwards, we meet with what appears to be a second portal, the basement course of two strong square pillars of masonry (P P) remaining in position; these two may have been spanned by an arch, or they may have been surmounted by statues of Victory. The latter supposition is suggested by the discovery of a nearly complete figure of the favourite goddess of the Romans, and a small fragment of a second, within the eastern gateway of BORCOVICUS. In the chamber which is entered after passing these pediments, the most striking object is an underground tank (F) about eight feet square, and six feet deep. The masonry of its walls bears the character of the second, rather than of the first period. Two narrow apertures on its south side, near the top, seem intended for the admission of water, and a shallow trough and gutter, on the edge of one of the opposite corners, have apparently been intended to carry off the

superfluous liquid. There is now lying at the bottom of it the stone lintel of a door-way, upwards of six feet long; before being precipitated into the tank, it would seem to have long lain upon the ground of the station, for it is much worn, as if by the sharpening of knives upon it. Proceeding in a straight line onwards, and at the southern extremity of this range of buildings, another underground receptacle (G) is seen. The woodcut represents it as it appears to

one standing on its southern edge. It is nearly of the same size as the former, but its masonry is evidently that of the earliest period. Three of its sides consist of strong masonry, the fourth has been formed by three flags of large dimensions, backed up with clay; two of the flags remain in their position; but the third (the middle one) has been laid prostrate by the pressure from behind. A flight of steps leads to the bottom of the vault, and the entrance is closed by a stone slab, moving in a groove upon two pairs of small iron wheels. A slit in the neighbouring wall allows of this door being pushed back into it. In many of our modern railway stations we see doors of similar construction. There is an opening at the bottom, in one corner of the

building, having much the appearance of a conduit; it is arched by a single stone, roughly marked with diamond tooling. The course of this channel has not been examined. The whole vault has evidently been provided with a covering. In its western wall is a projecting ledge; on this one or two courses of stone have probably rested, stretching inwards. The top would by this means be so contracted that it might be covered over by long flat stones; one suitable for the purpose, though broken in two, lies on the spot. It is difficult to resist the impression that this vault has been a receptacle for water, to whatever purpose the water may have been applied. In the bottom of this vault, lying in a position which leads to the belief that it had been carelessly thrown in, was an altar inscribed to the Genius of the Emperor and of the standards, which will be afterwards described.

Returning to the *via principalis*, another vault (H) will be observed encroaching on the line of the street, but parallel to the central plot of building. It is thirty feet long, eight feet broad, and about six feet deep. Its masonry is peculiar, but good. At the bottom of it were discovered a sculptured stone, representing three Nymphs at their ablutions, and a slab, inscribed to Antoninus Pius. What can have been the object of so many pit-like chambers? We cannot conceive that, in so cold and exposed a situation as BREMENIUM, the Varduli, a people from sunny Spain, would consider a cold plunge-bath a luxury, but the very reverse. As yet no well has been found within the station; may not these tanks have been intended to collect and preserve stores of water?

On the western side of the central block of buildings is a double range of barracks (B, C). Each apartment is sixty feet long, and fifteen broad. The masonry is exceedingly good, and evidently belongs to the first period. In the centre of the range, between the apartments, a deep passage (K) runs, flagged at the bottom, and apparently communicating with flues (N) beneath the rooms. This passage shows five courses of masonry *in situ*. The outer walls of these buildings have erections resembling buttresses placed against them (I, I), and the same number, eight, is appended to each. It is probable, however, that they were not in-

tended to strengthen the walls, but were connected with the heating of the apartments, for a flue goes under the floor from the centre of each bay. The floors of the room consist of a double set of flagstones with an intervening layer of clay between them. The floors are not supported upon pillars, as is usually the case in hypocausts, but upon dwarf walls: by this means the heated air would be carried along the passages with some of the precision which we see manifested in the galleries of a coal mine. In one of the bays formed by the projecting buttresses of this building, the cranium and several of the other bones of a man were found. The remains of an archway (M), leading into one of the dwellings (C), were discovered; it is probable that the other was similarly provided.

There are indications that a range of houses (D) of the same character as that which has now been described, stood upon the Eastern side of the central square.

Most of the other buildings which have as yet been excavated, belong to periods subsequent to the first erection of the station. Many of the apartments of these have been furnished with hypocausts; the pillars in one of them are very numerous, and have been very strongly acted upon by fire. More than one of the houses, which apparently belong to the Saxon or to the moss-trooping period, are remarkable for having on some of their sides double, and even triple walls, each being quite distinct in itself, and separated from its neighbour by a space varying from an inch or two to two or three feet.

It is evident that a very extensive system of drainage has been adopted in the station; the examination of it, however, has not proceeded far, and will be a work of some difficulty, in consequence of the changes which have taken place in the camp at different periods.

In the course of the excavations several inscribed stones and other antiquities have been found. The altar, which is here shown, was procured from the vault (G), which has already been described. The letters are distinctly formed; the only one respecting which there can be any doubt is the last on the third line. The inscription (supplying, between brackets, the letters necessary to make the words complete) may be read:—

G[ENIO] D[OMINI] N[OSTRI] ET
SIGNORVM
COH[ORTIS] PRIMÆ VARDVL[ORVM]
ET N[VMERI] EXPLORA
TOR[VM] BREM[ENII] COR[NELIVS]
EGNATIVS LVCILI
ANVS LEG[ATVS] AVG[VSTALIS] PR[O]PR[ÆTOR]
CVRANTE CASSIO
SABINIANO TRIB[VNO]
aram posuit.

To the genius of our Emperor and
of the Standards
of the first cohort of the Varduli
and of the Detachment of pio-
neers of Bremenium, Cornelius
Egnatius Lucili-
anus, the imperial Legate, Proprætor,
under the superintendence of Cassius
Sabinianus, the Tribune.
erected this altar.

Several inscribed stones had previously been found at this station, mentioning the first cohort of the Varduli, but only one had been met with to support the idea that the station of High Rochester is the BREMENIUM of the Itinerary.

The value of this inscription is therefore considerable, as confirming the opinion which was first expressed by Camden, that Bremenium and High Rochester are identical.

The name of the legate, Egnatius Lucilianus, occurs on a slab found at Lanchester, recording the building of a bath and basilica in the reign of Gordian. To this period, therefore, the altar before us may be ascribed.

Within the range of what we have denominated the prætorian buildings, and a little to the east of the vault in which the last altar was found, the slab which is here depicted was

discovered, lying on the surface of the ground. It bears undisputed marks of violence, which was probably inflicted upon it by the northern hordes, when the withdrawal of the Romans left them undisputed masters of the station. It had, however, previously suffered partial mutilation at the hands of the Romans, for the name of the emperor to whom it was dedicated had been purposely and carefully obliterated. Who the emperor was can only be a matter of conjecture—he is not unlikely to have been Heliogabalus, as after his assassination his name in several instances was erased from public documents. This inscription resembles, in the abundance of its ligatures, an inscription which has contained the name and titles of that emperor, found at CILURNUM. The name Geta has also been frequently obliterated from inscriptions, but the name of his brother Caracalla, with which it was usually combined, was generally left, which is not the case here. The inscription (supplying the letters necessary to elucidate the meaning) may be read,—

IMP[ERATORI] CAE[SARI]
P[IO] F[ELICI]
C[O]H[ORS] I F[IDA] VARD[VLORVM]
BALLIS[TARIVM] A SOLO REST[ITVIT]
SVB C[AIO] CLA[VDIO] PAVLINO LEG[ATO] AVG[VSTALI]
INSTANTE AVR[ELIO] QVINTO TR[IBVNO].

In honour of the Emperor Cæsar,
Pious, happy,
The first cohort of the Varduli, *styled* the faithful,
This ballistarium, from the ground restored,
under Caius Claudius Paulinus, Imperial Legate;
Aurelius Quintus, the Tribune, superintending the work.

In the well in front of the pretorian buildings, the slab, here shown, was found. The letters have been feebly cut,

and the stone is somewhat injured by time, but with a little care the whole of the inscription may be accurately deciphered. It may be read:—

IMP[ERATORI] CAES[ARI] T[ITO] AELIO
H[A]D[RIANO] ANTONINO AVG[VSTO] PIO P[ATRI]
P[ATRIAE]
SVB Q[VINTO] LOL[LIO] VRBICO
LEG[ATO] AVG[VSTALI] PRO PRAE[TORE]
COH[ORS] PRIMA LING[ONVM]
EQ[VITVM] F[ECIT].

In honour of the Emperor Cæsar, Titus Ælius,
Hadrianus Antoninus, Augustus Pius, father of his country,
under the direction of Quintus Lollius Urbicus,
Imperial legate and pro-prætor,
the first cohort of the Lingones,
mounted, erected *this building*.

This stone is exceedingly interesting, as it proves that whilst the generals of Antoninus Pius were pushing their conquests forward into Scotland, they did not neglect the Barrier of the Lower Isthmus, and its associated camps. An altar, found at CONDERCUM, was dedicated to Jupiter, for the safety of Antoninus Pius; and a slab, found at HUNNUM, bears date in the same reign. Since we have such decisive proof that a garrison was maintained in these camps, at this period, we may infer that none of the other stations of the Wall were deserted, and so come to the conclusion that the Antonine Wall was but an outwork of the greater effort of Hadrian.

The occurrence of the name of Quintus Lollius Urbicus on this slab is worthy of note. Capitolinus, the Roman historian, tells us, that the Caledonian Wall was built by Lollius Urbicus, and the fragment of a votive tablet, discovered upon it, near Bemulie, corroborates his statement.

P. LEG. II. A.
Q. LOLLIO. VR.
LEG. AVG. P. PR.

It is interesting to find, in an outpost of the southern Wall, a recognition of the services of the legate of Antoninus, not less distinct than any which the northern Barrier affords, though the latter was erected under his special superintendence.

We have but few references to the Lingones in the lettered tablets discovered in Britain. The name of the fourth cohort of the Lingones occurs upon an altar found at Tynemouth. Camden saw an altar, discovered at Moresby, which was dedicated to Silvanus, by the second cohort of the Lingones. At Ilkley, in Yorkshire, was a stone which, as read by Horsley, contained a record of the same cohort. A small altar, found at Lanchester, contains a reference either to the first or second cohort of the Lingones. The drawing of the stone, which is given in the *Britannia Romana* (Dur. XV.), would induce us to suppose that the dedication was made by the first and not the second cohort; but as no trace of the first cohort had been found elsewhere in Britain, and as in Camden's drawing of the stone a smaller I is set before the other I, Horsley came to the conclusion that the second cohort was meant. As we have

now got distinct proof of the presence of the first cohort of the Lingones in Britain, and as the altar recently discovered at BREMENIUM, which we have already discussed, in common with one found at Lanchester, contains the name of the same imperial legate, we may well doubt whether Horsley was right in deferring to the opinion of Camden in the case before us. If so, and if both inscriptions were dedicated by the same troops, we have in conjunction with the occurrence of the name of Egnatius Lucilianus, in both places, a proof of the relationship subsisting between the stations of High Rochester and Lanchester. In corroboration of this view, it may be observed that the Lanchester altar is dedicated to the *Genius* of the pretorium, and that most of the invocations by the garrison of Bremenium are to the *Genii* of their respective objects of worship.

The curious sculptured stone here represented, was found

in the same tank as the tablet which we have been discussing. It doubtless represents the nymphs who presided over the fountains of the streams whence the troops derived their supplies of water.

A brief reference to the minor antiquities which have been discovered must close this account of the excavations of BREMENIUM.

The number of coins found here, has not been nearly so great as is generally discovered in stations further to the South, and they are usually in very bad condition.

The most curious of the bronze articles is represented in the woodcut; it may have been a portion of a standard.

The eagle in the centre is distinct; the inscription in the circle, with the exception of the final letters of the two adjectives, is also plain. It is not impossible that the cohort of the Varduli may have placed themselves under the special protection of Jupiter, and so have assumed the title of COHORS OPTIMI MAXIMI—the cohort of the best and greatest one. A less ambitious view of the inscription would be to suppose that Optimus Maximus was a commander of the cohort, and gave his name to it.

Another bronze article is a sword or knife handle in the form of the head and neck of an eagle. A figure of our Saviour extended on the cross, made of bronze, and having holes for the reception of jewels, is also among the articles discovered. It is of the style commonly called Byzantine. This, of course, cannot be referred to the Roman age, but affords proof that the station was not entirely deserted after the Romans left it. It may have been deposited by a crusader of the thirteenth or fourteenth century.

The fragment of a tile bearing the stamp of the 6th legion, a quantity of Samian ware, vessels of the other kinds of earthenware, some of them of beautiful workmanship and

peculiar form, glass which has doubtless been formed for glazing windows, glass vessels, a shallow metallic cup, fragments of deer's horns, soles of sandals in great variety and abundance, are amongst the other minor articles which the spade of the excavator has brought to light.

Such is a brief description of the excavations which have been conducted in the course of the summer by our noble Patron. Let us hope that as valuable results may accompany the further prosecution of the work.

THE ARCHÆOLOGY OF THE COAL TRADE.

By T. JOHN TAYLOR.

(*Read at Newcastle-upon-Tyne, on 25th August,* 1852.)

In writing the following Paper, relating to a subject which possesses not only a local, but also a national interest, I have felt the necessity of enlarging the customary basis of inquiry and research. Coal mining has long ceased to be a separate subject of investigation; it has required, and has received, the well-bestowed aid of many branches of science, and has either participated in, or itself given rise to, some of the most remarkable inventions and discoveries of modern times. I allude more particularly to the steam-engine, the earliest practical applications of which were to mining purposes; and to railways, called long after their introduction by no other name than that of the "Newcastle Roads;" to the use of coal in the reduction of metallic ores, and in gas-lighting; with all of which the history of coal, in its downward course, becomes so intimately blended, that we cannot well abstain from regarding the mining of this fossil, and the resources which it has either created or sustained, as being parts of the same extensive subject.

The early notices of coal are very scanty. Probably, if the subject could be fully investigated, it would be found that its most ancient employment has been amongst the Chinese.* At all events, the more western nations have not

* Marco Polo mentions the use of coal in China in the thirteenth century, and numerous coal mines are now being worked in that country. To this day, however, the Chinese methods of extracting coal continue to be of the rudest description. Where it is won and worked in the cliffs of the Pe-Kiang River at Ying-tih by adits from the day, no assistance is derived from machinery, and no coal is raised through vertical shafts. The adits drain the mines, and also serve for ingress and egress. Where the mouth of an adit is much above the level of the river, stone steps

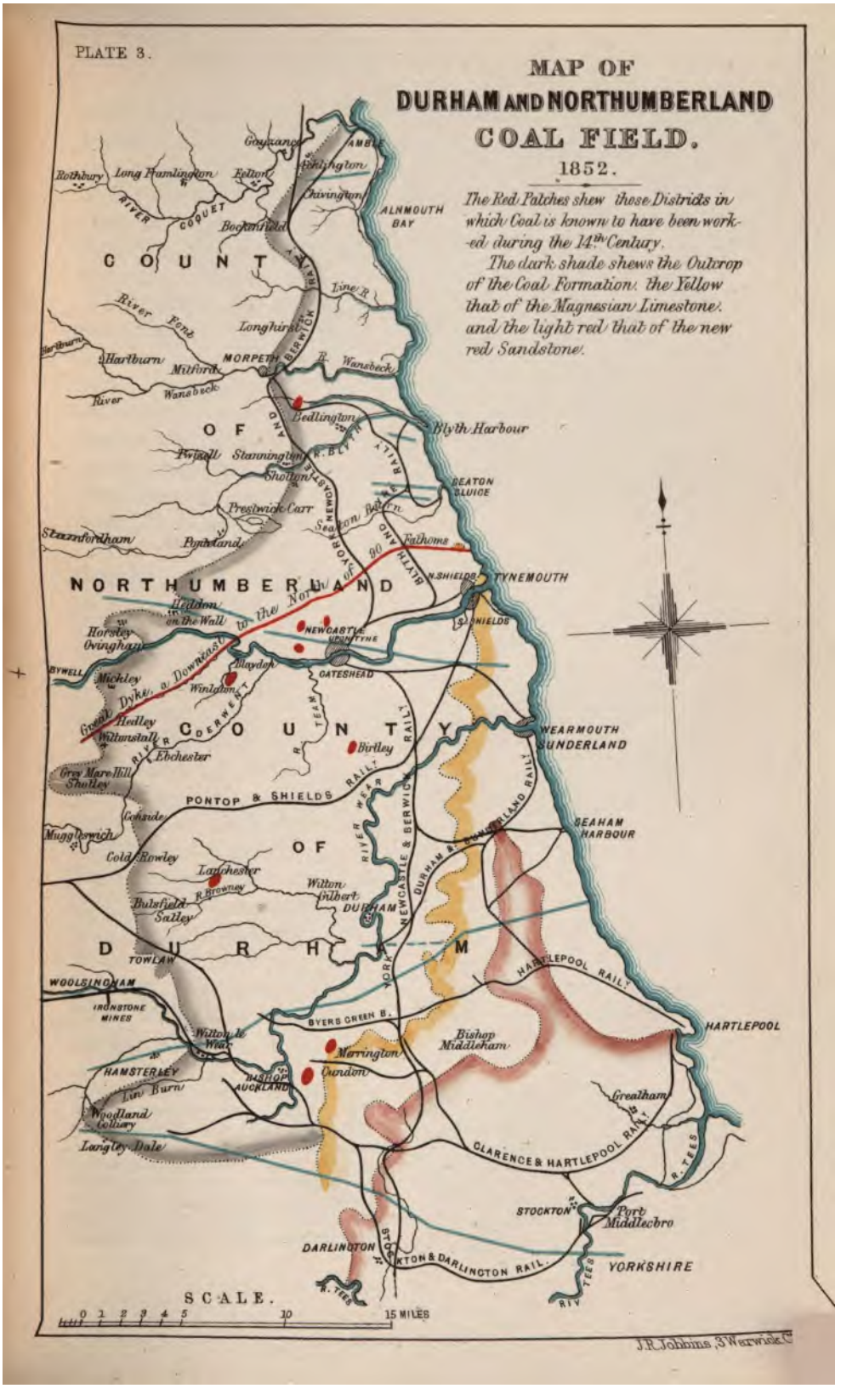


PLATE 3.
MAP OF
DURHAM AND NORTHUMBERLAND
COAL FIELD.
1852.
The Red Patches shew those Districts in which Coal is known to have been worked during the 14th Century.
The dark shade shews the Outcrop of the Coal Formation; the Yellow that of the Magnesian Limestone; and the light red that of the new red Sandstone.
COUNTY OF NORTHUMBERLAND
COUNTY OF DURHAM
Rothbury
Long Framlington
Felton
Guyzance
Amble
Warkworth
Chevington
ALNMOUTH BAY
RIVER COQUET
Rockcliffe
NEWCASTLE & BERWICK RAIL.
Line R.
River Font
Longhirst
Harburn
Mitford
MORPETH
R. Wansbeck
River Wansbeck
Bedlington
Blyth Harbour
NEWCASTLE & BERWICK RAIL.
Pegswood
Stanningley
R. BLYTH
BLYTH & TYNE RAIL.
Shotton
BEATON SLUICE
Prestwick Carr
Seaton Burn
Stannerdham
Pyrehead
York 90 Fathoms
N. SHIELDS
TYNEMOUTH
Heddon on the Wall
to the North
NEWCASTLE UPON TYNE
S. SHIELDS
Horsley
Ovingham
BYWELL
Mickley
Blaydon
Winlaton
GATESHEAD
Grimly Dyke, a Downcast
DERWENT
Hedley
Wittonstall
RIVER TEAM
Birtley
WEARMOUTH
SUNDERLAND
Ebchester
Grey Mare Hill
Shotley
PONTOP & SHIELDS RAIL.
RIVER WEAR
DURHAM & SUNDERLAND RAIL.
Consside
Muggleswick
SEAHAM HARBOUR
Cold Rowley
Lanchester
R. Browney
Wilton Gilbert
DURHAM
Bulsfield
Sailey
NEWCASTLE & DARLINGTON RAIL.
TOWLAW
WOOLSINGHAM
IRONSTONE MINES
HARTLEPOOL RAIL.
BYERS GREEN B.
Witton le Wear
Bishop Middleham
HARTLEPOOL
HAMSTERLEY
Marrington
Dundon
BISHOP AUCKLAND
Greatham
Lin Burn
Woodland Colliery
Langley Dale
CLARENCE & HARTLEPOOL RAIL.
R. TEES
STOCKTON
Port Middlesbro
DARLINGTON
STOCKTON & DARLINGTON RAIL.
YORKSHIRE
SCALE.
0 1 2 3 4 5 10 15 MILES
J.R. Jobbins, 3 Warwick Ct.

made a common use of this fossil until periods comparatively recent. It is mentioned under the name of *Lithanthrax* by a single Greek author, as having been found at Elis, and used sometimes by smiths. In the other locality named by him, he appears to consider it as being more remarkable from its supposed association with other substances, than from any valuable property of its own.*

Its partial use in Greece entitled it to at least a name; and its properties being referred to those of charcoal, the very obvious one of its superior hardness was the cause of its being called "stone coal," a phrase natural and descriptive enough, and which reminds us of the appellation given to coal by the foreign prelate Æneas Sylvius, in the fifteenth century, when he saw with much surprise what appeared to him lumps of *black stone* given for alms to the poor at the gates of the Scottish monasteries.†

The Romans do not appear to have had any proper designation of their own for a substance which was found in so many parts of their extensive empire. There are indeed evidences of its practical use by them in this district, like that which occurred at Magna, and also in more recent instances upon the records of the Antiquarian Society of this town, where coal cinders have formed a part of the relics found in Roman stations. A notable example is also mentioned by Whitaker, of Roman coins being found in cinders turned up at Brierly, in the West Riding of Yorkshire. But neither these, nor other isolated instances, like that given by Solinus, of the burning of coal on an altar at Bath, are sufficient to warrant the conclusion that this fossil has been, like lead and iron ores, *systematically* worked by the Romans in Great Britain. A distinction is obviously to be drawn between the casual employment of coal and its habitual use: and that the Romans did not work it on a large scale, may be regarded perhaps as sufficiently proved by the fact, that in this country beds of coal appear at the

are constructed, down which bearers carry the coals from the mine to barges which wait at hand for a loading. Neither barrow, tram, nor any other mechanical advantage is made use of by these bearers, who carry the coals in two baskets, one slung from each end of a bamboo cane that rests across the shoulders. (China Illustrated, vol. iv. p. 14, with a drawing.)

What is stated in the text appears to be a fair inference from the fact of coal being now extensively worked in China, taken in connexion with the uniform habits and customs of the Chinese from a very remote antiquity.

* Theophrastus, B.C. 371.

† Ænei Sylvii (afterwards Pope Pius II.) Opera, p. 443.

day, and are yet to be seen entire, within short distances of their towns and stations; such are those we find in Redesdale, near Bremenium and Habitancum.

We are not to infer that the want of mining skill or practice precluded the extensive working of our coal mines by the Romans. On the contrary, such descriptions remain of their operations elsewhere, as to prove them possessed of quite adequate means and knowledge to win and work such coal beds, lying near the day, as those which have just been alluded to. The account given by Diodorus, of their mode of working the metallic mines of the Pyrenees, might have been written for a much later period. He says that the mining galleries were many stadia in length, and also carried to an extraordinary depth; and that they were drained by means of Archimedean screw pumps, which lifted the water from stage to stage up to the requisite level. From the remains found in the same mines, it appears that the tools were the miner's pick, the pick-axe, and the hammer and wedges.* It is evident, therefore, that no want of skill prevented the Romans from working our coal mines. The simple cause of their not doing so may be esteemed a result of their established usages, as well as of the fact, that abundance of wood was readily procurable during their occupation of Britain. In our border districts vast tracts of hill and dale, where forests grew, are now only

* "The Romans constructed their towers of a circular form; and by habit or principle they made also round shafts to their mines. The Moors and the Franks, on the contrary, had square towers and square shafts. We meet with both forms in the Pyrenees, and are able to recognise eras accordingly."—*Jean de Malus*, 1600.

The authority for the passage in the text is that of the *Baronne* de Beausoleil (Restitution de Pluton, 1632). She and her husband, who appears to have borne a very secondary part in their pursuits, were itinerant metallurgists in the beginning of the seventeenth century. This eccentric lady boasts that she has acquired a knowledge of mining by thirty years of actual practice. She believed, like the age generally, in astrology, and in ghosts, and concludes a fervent poetical address to Cardinal Richelieu by a pun upon his name, saying, that if her advice is followed, France will become a Riche-lieu.

"Les Anciens Mineralogistes de France," published by Ruault, Paris, in 1779, is a curious work, with many historical notices, not only of French mining, but of that of other countries, from very early periods. It mentions the roofing of the Abbey of St. Denis with lead in the time of Dagobert I. (635). The object of the publication was to bring together a number of scarce works on mining and metallurgy, like those quoted above, and of which the collection contains above forty re-prints, from the early part of the sixteenth century downwards.

The Rev. C. H. Hartshorne, of Cogenhoe, Northampton, has favoured me with a drawing of a Roman pickaxe found in the ogo or cave at Llanymynech, or village of mines on the North Welsh borders, in 1755. It is between eight and nine inches in length, and is now in the Free School Library, Shrewsbury. To the same distinguished antiquary I am indebted for a copy of Dud Dudley's Metallum Martis.

open heaths or peat mosses, and this change is, comparatively speaking, recent. The "greate wood of Cheviotte" is celebrated down to times much later than those of the famous "huntynge" of Chevychase.*

Tennant mentions a flint axe, found stuck in a vein of coal where it bassets out at Craig y Parc, in Monmouthshire, and from this circumstance, and that of there being a British name for coal, it is supposed that the Britons were acquainted with this fossil. Yet such evidence does not amount to much. Had the coal been *mined*, instead of being only superficially cut away where it appears at the day, we might then have inferred its use in the large way, but not otherwise. We are told by Cæsar that the Gauls were rendered excellent miners by their iron works, and that the customs of the Britons who dwelt near the sea-shore were much the same with those of the Gauls. But metallic mines would furnish those Britons with the means of commercial exchange, while their forests supplied them with fuel. They did not require coal, either to satisfy their own wants or those of the foreigners who traded with them.†

In the year 852 occurs a payment in kind to the Abbey of Peterborough, from Wulfred of Sempringham, of ten vessels of Welsh and two of common ale, sixty cart-loads of wood, and twelve of fossil, or pit coal—ᵹræl þoðun ȝnæran. Probably the coals were intended for smiths' purposes, a craft then much in request, and in which many of the monks themselves are said to have been very expert.‡

* This forest is mentioned by Leland; and we have the following notice of it in the Survey of Sir Robert Bowes and Sir Raufe Elleker, Knyghts Comyss'ers, 2 Dec., 1542.

"The Scottes as welle by nighte tyme secretly as upon the daye tyme with a more force do come intoe ye sd. foreste of Chevyotte dyverse tymes and steale and carrye awaye muche of ye sd. woode, which is to them a greate profitte for the mayntenance of their houses and buildynge."

The times were past when timber grew so plentifully as to render "Houseboot, Hayboot, and Fyreboot," matters of course and usage, without any special grant to a tenant.

† A people who can mine and smelt metallic ores must be a good deal advanced in civilization. Diodorus remarks that the tin of Britain "is transported by the foreign merchants who have purchased it from the Isle of Wight to Gaul, where it is loaded on horses, and thirty days are occupied in conveying it from the coast opposite England to the mouth of the Rhone."—Lib. v., c. 16.

This tedious and costly journey across the whole breadth of France, a direct distance of above 500 miles, was preferred, it seems, to a sea voyage viâ the Straits of Gibraltar, though the practicability of the latter had long before been proved.

‡ If this coal was conveyed by sea, we might then conclude that it came from Newcastle, and consequently that an export trade in coal from that town existed at an earlier date than we have been in the habit of supposing. Most probably, however, it was brought from the Leicestershire coal field.

Though following the received authority

The use of coal continued to be very partial for some centuries after this early notice. We find no record of it during the Danish period, nor for some time after the Norman Conquest; and in the Leges Burgorum, made in or about 1140, a particular privilege is granted to those who bring fuel into boroughs. Wood, turf, and peat are expressly mentioned, but there is no allusion to coal. These laws were made in Newcastle by David, King of Scotland, then in possession of the town. In Bishop Pudsey's Boldon Book occurs, in 1180, a notice of coal in connexion with smith's work, a grant of a toft and croft being made to a collier for providing coals for the cart-smith of Counden. At Bishopwearmouth the smith had twelve acres for the iron-work of the carts, finding his own coal; and at Sedgefield the smith had one ox-gang on similar conditions.

It is indeed probable that coals were used for manufacturing purposes, and that they were also exported, previously to the grant of any royal charters to work them; for the obvious reason, that privileges are not sought for until their value has been appreciated. In the year 1239, King Henry III. granted a charter to the freemen of Newcastle-on-Tyne, for liberty to dig coals in the Castle Field and the Forth. Six years afterwards coal is called by Matthew Paris, "*carbo maris*," *sea coal*, from its passage to London by sea; though Leland seems to have mistaken the origin of this phrase, which he ascribes to the visible out-crop of seams of coal in situations near the sea.

In 1189 the Liege Mines are said to have been discovered;* so that the development of the coal trade at Newcastle and in Liege, which may be called the Newcastle of the Continent, was very nearly simultaneous. We may, in fact, mark this century as the commencement of the epoch of modern industry, the beginning of the period of more settled forms of government. The great towns had thriven under the protection of municipal privileges, the habits of the people began to improve, and there consequently ensued an increasing demand for those industrial products, in administering to which coal has ever since borne so prominent a part.

in this matter, I must yet be permitted to remark, that it appears to me very questionable whether pit coal is really meant by the phrase ȝpæȝan. Turf or peat is *graven* or dug, as well as pit coal, and is more likely in this particular case to be intended.

* *Morand, du Charbon de Terre*, Part I.

The tracts of ground *extra muros*, mentioned in the charter of Henry III., together with the town moor of Newcastle, contained in that day several unworked beds of coal, particularly the seam of from five to six feet thick, called the High Main, which is here so near the surface as to have been easily accessible in the early times to which reference is being made. King John had by a previous charter made a grant of the town at a fee farm rent of one hundred pounds per annum, payable to the crown; and the liberty of digging coals in aid of this rent was granted to the burgesses by his successor.* A great increase in the value of the town ensued, as appears from the inquisition made by order of Edward I., when it was declared that the town was worth £200 per annum if it were in the King's own hands, the coal trade having increased very rapidly towards the beginning of the fourteenth century, when it encountered an opposition of a very remarkable character.

In the year 1305, towards the end of the reign of Edward I., those merchants and artisans of the metropolis who employed the greatest quantity of combustible in their crafts, such as smiths and brewers, were in the habit of using coal for that purpose, especially because wood and charcoal were already, in populous districts, becoming scarce and costly. This practice was complained of, and at length the prejudice ran so high that the nobles and commons assembled in parliament formally represented the burning of coal as a public nuisance, which corrupted the air by its smoke and noxious vapours. The King consequently issued a commission, with strict orders to punish the delinquents by fines, and by the destruction of their furnaces and kilns. However, notwithstanding this powerful opposition, coal continued to be used, and a few years afterwards we find it an inmate of the royal palace, ten shillings' worth of it having been used at the King's coronation. I may here remark, with a view to maintain the connexion of the subject, that a similar prejudice was excited four centuries later, especially after the declaration of Hoffman, in 1740, that the people of England, more particularly of London, were liable to complaints of the chest on account of the irritation arising from the smoke of their coal fires.†

* See Appendix, No. I.

† *Frederic Hoffmani Opera*, tom. i. c. 3, Geneva, 1740.

M. Morand, who took a good deal of trouble about a century ago in investigating this subject, has given certificates from the Faculty of Medicine at Paris, the College of Physicians at Liege, and the Medical Society of London, all purporting that the product of the combustion of coal is not injurious to health. "We find," say the London Faculty, that "in no city is the standard of health higher than in our English capital, though its atmosphere is saturated with coal smoke." Notwithstanding this consolatory assurance, it is difficult to remain insensible to those visibly disagreeable consequences of coal fires which are so much deprecated by Evelyn, and it is to be hoped that ere long there will be devised some method of consuming smoke, which shall be practical and economical enough to admit of general application.*

To resume. In the beginning of the fourteenth century we find the coal trade progressing by the working of old collieries and the opening of *new ones*, two of which are mentioned as having been let by the prior of Tynemouth, near Elswick, the rent of one of them being six marks yearly, to be paid as soon as the tenant commenced working the coal. The rent of another new colliery, in 1334, is stipulated to be 40*s*. yearly. The term "*stathes*" in a lease of 1338, is expressed in English with little variation from its present form. The technical phrase *wayleave* becomes also common.†

I may here remark, that the coal staith was originally not merely a station on the bank of the river for putting coals on board the keels or barges, by which they were to be conveyed to the shipping in deeper water, but it was also a storehouse for coal, and was therefore covered in, presenting the appearance of a large shed, for the purpose of sheltering its contents from the deteriorating action of the weather. Some old staiths yet remain, especially above

* Evelyn gravely proposes to rescue the city from that "hellish and dismall cloude of sea coale," by banishing all brewers, dyers, soap and salt boilers, and lime-burners, down below Greenwich. On his own showing there were, however, more intolerable evils in London than coal smoke: the houses were built chiefly of wood; even brick and mortar were then only *in posse;* the streets were narrow, crowded, filthy, and hardly ever dry. This was before the great fire.—*Fumifugium; or, the Smoke of London dissipated*, 1661.

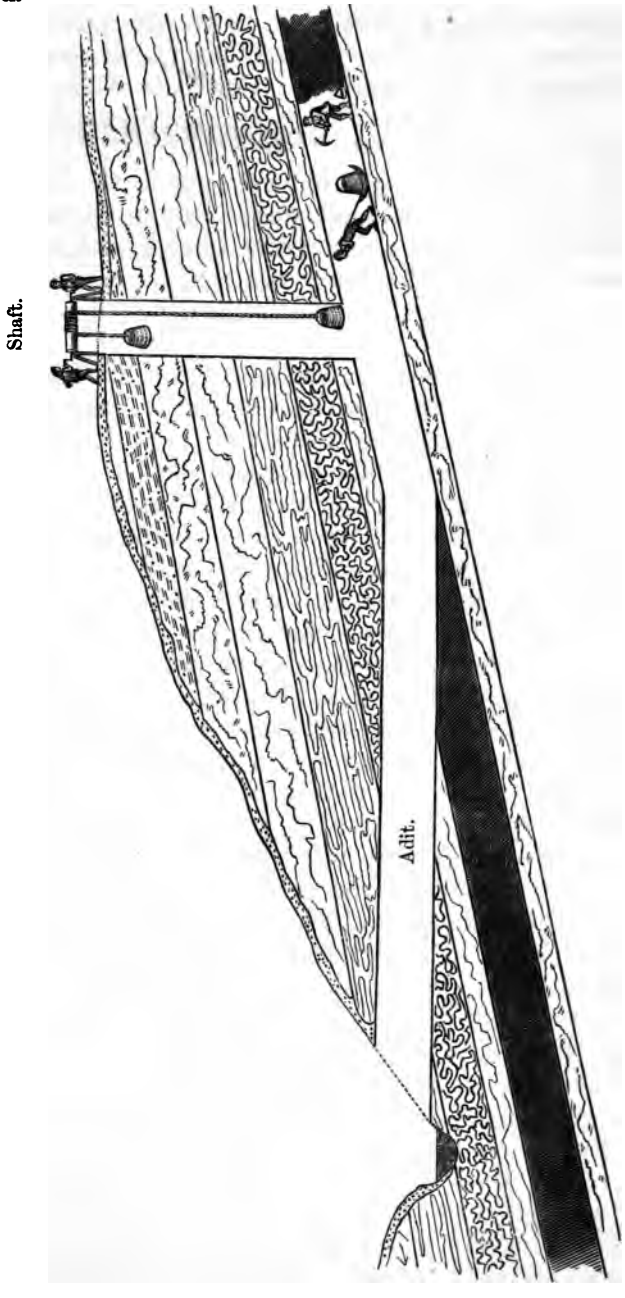
† The word *staith* is Saxon, *stathe*, a bank, a shore *statio navium*. Wayleave has locally a more extended meaning than *chiminagium*, a word often put for it, but which means a toll taken for passing through a forest with carts or horses loaded.

Newcastle Bridge, and are partially appropriated to their ancient uses: but the improvement of railway conveyance, and enlarged working powers, have so greatly increased the facility of supply, that there is no longer the same occasion for storehouses of this character; the coals of the several collieries being, in the most of cases, sent direct for shipment from the pits.

In 1351, Edward III. granted a license to the burgesses of Newcastle to dig coal and stones in the Castle Field, without the walls; and seven years later a further grant occurs, confirming to the burgesses the possession of the Castle Moor and Castle Field, with liberty to dig coals in the same.

From a license granted by the same king, we learn that the coal field in the Birtley district was at this time opened out. A curious document from the Pipe Rolls of the Exchequer, under date 19th February, 1367, shows that coals were then being worked also in Winlaton: and thus we find, that in the middle of the fourteenth century collieries were in operation on our coal field to the north, south, and west of Newcastle, being those situations in which the coal beds approach the surface; for no attempt had yet been made to win the deeper portions of the coal field; indeed, the necessity had not arisen for doing so, nor were the resources of the coal-miner adequate to such a purpose, his operations being, up to this period, and for a long time afterwards, of a very rude description. The mines were freed from water by adits from the day, and the machinery, when any was employed in raising the coals, did not go beyond the simple form of the common winch, or, as it continues to be locally termed, the *jack roll.* The produce was taken away from the pits on the backs of pack-horses. There are to this day little collieries, supplying a limited district in remote parts of the counties of Northumberland and Durham, which realize our idea of these ancient mines; and by a *load* is still meant, in several of them, not any relation to the quantity which can be dragged by a horse in a cart, but as much as he could carry on his back in those times, when the want of roads precluded the employment of wheel-carriages. Half a century ago, before rails and wheel-carriages were introduced into the little collieries in question, they formed an almost per-

fect type of the early methods of mining in this neighbourhood.



PROFILE VIEW OF EARLY COAL MINING.

First stage of mining, a simple adit for bringing out coals, and drainage. Coals carried on backs of bearers.
Second stage, more advanced, adit for drainage; shaft for drawing coals, and ventilation. Coals dragged on sledges.

I have alluded to an extract from the Pipe Rolls in the 46th year of Edward III., from which it appears that 676 chaldrons of coals were purchased for consignment to the Clerk of the Works at Windsor Castle, where considerable additions were at the time being made to the previous buildings. The price per chaldron is put down at 17*d.*; but this is not the modern Newcastle chaldron of 53 cwt., nor is it the recent, and now disused London chaldron of nearly half that weight. We learn that there were 20 of these ancient chaldrons to a keel, from which it would seem that the chaldron was about a ton, or probably something more;* and such being the case, coals are relatively cheaper now than at the period mentioned; for if we take the prices of these times as given by Fleetwood and others, and compare them with the present ones, we shall find that corn, being the average of wheat, barley, and oats, has increased in nominal price in the ratio of 9 to 1; butcher's meat as 18 to 1; labour as 8 to 1; and coals as 5 to 1 only: the present price of coals of medium quality being 6*s.* to 7*s.* per ton at the place of shipment.

The keels were manned by five hands, then called "keelers," who had 6*d.* each for their work, in taking the coals from "Winlaton" to the port of Newcastle, with 12*d.* for the hire of each keel.

In this account we have also broker's charges, and the expense of a person employed to receive the coals at London, and to forward them to the Clerk of Works at Windsor. The freight from Newcastle to London is stated to be 3*s.* 6*d.* per chaldron. The scorage or ingrain is mentioned, an item still to be found, amongst others of a not very intelligible character, in the account of sales of coals in London.

If we divide the total cost, as given, 165*l.* 5*s.* 2*d.* by 676 chaldrons, we find the price in London to be 4*s.* 11*d.* per chaldron. In 1402, Folkes states the price to be 4*s.* 8*d.* per chaldron.

This curious document came into my possession through the medium of a friend, and I am not aware that it has yet been published: at all events, it is too intimately connected with the coal trade to be omitted here, more especially as it throws so much light upon that department of the

* See further on, p. 168.

trade with which we were previously the least acquainted. I have therefore inserted it at large in the Appendix.*

We have thus a tolerably clear historical account of the Newcastle coal mining and its adjuncts in the fourteenth century. We have seen that collieries were then certainly opened over a considerable extent of our coal field, since they were being worked in the districts of Newcastle, Elswick, Birtley, Winlaton, Merrington, and Lanchester. To these may be added, coal mines in Bedlingtonshire, the produce of which was probably shipped in the river Blyth: for we find the Bishop of Durham, in 1368, appointing a supervisor of his mines in that district; and that coal was shipped from Sunderland in the same century, we have a proof in the Rolls of Whitby Abbey in 1395, when 13*s.* 4*d.* was paid to William Rede of Sunderland for 4 chaldrons of coals. We find again a receipt from the prior of St. John of Jerusalem, of nearly the same date, for rent of the mines of sea coal at Fenham. We have also a very clear conception of the simple method of winning and working mines then in use, as well as of the selling price, which again enables us to form a pretty accurate notion of the cost of production: and we find that the coals were conveyed in these very ancient vessels, of Saxon origin and Saxon name—the keels, down the water of Tyne, and put on board-ship below Newcastle Bridge, very much in the same fashion as they continue to be at the present day from the western collieries; though the subsequent winning of the deeper portion of the coal field, between Newcastle and the sea, where there is better water in the river, and no interference with the navigation in the shape of a bridge across the channel, have enabled methods to be adopted of transferring the coals at once from the wagon into the ship's hold without the intervention of smaller craft.†

It is likewise in the fourteenth century that we meet with the first notice of *duties* in connection with coal. In the year 1379, a tax of 6*d.* per ton every quarter of a year was imposed upon ships coming from Newcastle with coals, "for the defence of Scardeburg against the French,"

* See Appendix No. II.

† The direct shipment of coals is now effected either by the old mode of spouts, which are, however, much improved by the introduction of different tiers, to suit the rise and fall of the tide; or by means of the coal crane or *drop* (Plate 6), first designed by the late Mr. W. Chapman. Mr. Benj. Thompson claims the merit of its successful practical application in 1812.

"contra inimicos Gallicos." The facilities for the collection of duties on seaborne coal have been one cause of the

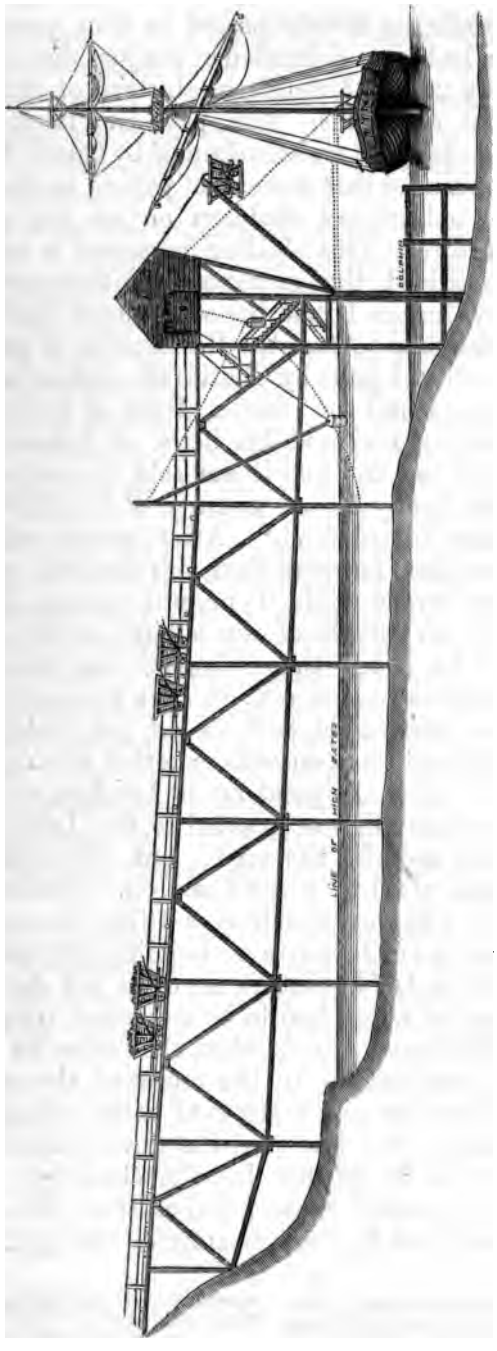
OLD COAL STAITH—LOADING OF KEELS.

numerous imposts levied on a product which is surely entitled, equally with any in the class of essential articles, to be free from this kind of imposition. Yet, from the

fourteenth century unto the nineteenth, coal has never been free from one kind of tax or another, too often levied for, or

MODE OF DIRECT SHIPMENT BY SPOUT.

appropriated to, very anomalous purposes. In 1421, we learn that a duty of twopence per chaldron was payable to the Crown on all coals sold to persons not franchised in the



MODE OF DIRECT SHIPMENT BY DROP.

port of Newcastle; a statute passed in that year, reciting that the king had been defrauded of his just dûe by making the keels carry 22 or 23 chaldrons, instead of their proper measure of 20 chaldrons. The payment itself got into arrear, and was long afterwards claimed by Queen Elizabeth, when it was arranged that, instead of paying up the arrears, a duty of one shilling per chaldron on sea coal should be charged in future. This shilling possessed a remarkable vitality: it outlived the monopolies endeavoured to be established by Charles I., and the struggles of that monarch with his parliament. After the Restoration, it was let out to farm in fractional parts by Charles II., and at last settled by him on his natural son Charles, Duke of Richmond and Lenox, and failing him and his heirs, on Louise, Duchess of Portsmouth; and in 1799 it was sold to government by the Richmond family for an annuity of £19,000, payable out of the consolidated fund.* After having subsisted in one form or another, for more than four hundred years, this tax, a peculiar burden of the Tyne, was repealed in 1831.

With a view to dispose of the subject of the duties on coal, it may be added that Elizabeth imposed 5*s.* per chaldron on coals sent over sea: this tax was maintained by James I., who also added to it 3*s.* 4*d.* per chaldron, with 1*s.* 8*d.* per chaldron more on coals exported in ships belonging to aliens. After the great fire of London, an impost of a shilling per chaldron was granted to the Lord Mayor to enable him to re-build the city; but this being found insufficient, was raised to 3*s.* per chaldron. Parliament also imposed a tax of 2*s.* per chaldron in 1670, three-fourths of which had to be employed in re-building fifty-two parish churches; and in 1677 a further tax of 3*s.* per chaldron was imposed, a part of which had to be employed in re-building St. Paul's. In Queen Anne's reign, the duties for re-building churches continued. In the course of the eighteenth century, the taxes on coal underwent many changes, until at length, during the late war, the government duty was made as high as 9*s.* 4*d.* per London chaldron. Even in 1830 the tax amounted to 6*s.* per chaldron. These duties, which were not paid by the consumer on the spot, but bore

* The annuity was subsequently converted into stock in the Three per Cents., of the amount of £633,333 6*s.* 9*d.*, at three several periods and payments—in 1802, 1810, and 1824.

so heavily upon persons whose coal reached them by a long and expensive transit, have been repealed, it is hoped never again to be imposed. But the trade continues to be fettered by municipal charges, of which the most grievous are those levied in London, under the name of City Dues and Orphans' Duty, amounting to 1*s.* 1*d.* per ton.*

I find a very clear exposition (Appendix, No. III.) of the early duties on coal in a manuscript minute of 1620; one of the many curious manuscripts with a perusal of which I am favoured, from the archives of the Dacre, Tempest, and other families, through the instrumentality of John Clayton, Esq., and of Robert Blencowe, Esq. I have been also much indebted to the manuscripts of Charles Townley, Esq., the successor of the ancient lords of Stanley, Stella, and Winlaton; and to those of His Grace the Duke of Northumberland, the records of whose noble house are so remarkably illustrative of old English manners and customs.

During the long civil wars of the Roses in the fifteenth century, hardly any notice occurs of coal-mining in our history. In 1512, the Northumberland Household Book mentions the use of coal, the price of which is stated at 5*s.* per chaldron, and that of an inferior sort at 4*s.* 2*d.* But the coals were, it seems, burned with a mixture of wood, the use of which was abandoned only after it became scarcer; and probably also when the opening of deeper mines caused that improvement in the quality of coal which is found, as a general rule, to accompany its increased depth from the surface.

In 1529, Cardinal Wolsey, then Bishop of Durham, appointed a superintendent of the mines of lead, iron, and coal, within his demesne lands of Durham, who was to receive daily one chaldron of coals out of each coal mine

* The Orphans' Duty has long ceased to be appropriated to its original purpose, as provided by statute in 1694,—that of enabling the city of London to discharge the principal and interest of a debt due from them to the orphans, and other creditors, referred to in the Act. The charge of 1*s.* 1*d.* per ton, mentioned in the text, is now appropriated as follows:—

	Per Ton. *s.*	*d.*
Metropolitan Improvement Fund Duty, applied by the Corporation of London and the Commissioners of Woods and Forests . .	0	8
Ditto, applied by the Commissioners of Woods and Forests	0	1
Municipal dues taken in lieu of metage and other charges payable to the Corporation of London	0	4
	1	1

The total amount of these dues in 1850 was £175,911 15*s.* 6*d*

within the demesnes of Gateside, Whickham, and Lyan Dean; and in 1530, the Reverend Father Thomas Gardiner, then prior of Tynemouth, granted a lease of the coal mines in Elswick, at the annual rent of £20, upon condition that not above twenty chaldrons should be drawn in a day.

We may here, as well as in other instances of the period, observe an arrangement similar to that of existing leases of coal, in which a certain, and not an unlimited quantity, is stipulated to be worked for a fixed amount of rent. This circumstance, and the larger amount of rent charged, shows the increased value placed upon coal at the epoch under consideration. In the earlier grants there is not a condition of this nature.

It would indeed appear, that in the latter part of the sixteenth century, the use of coal was pretty general for manufacturing and culinary purposes, but not for domestic fires. "It crept," Harrison observes, in 1577, "from the forge into the kitchen and hall;" and he adds that it had already found its way into some of the "greatest merchants' parlours." We are also told by Gray, in his "Chorographia," published in 1649, that the coal trade "began not past four score years since," that is, about the year 1560 or 1570, "coals in former times being," as he explains, "only used for smiths and for burning of lime; but woods decaying and cities and towns growing populous, made the trade increase yearlie." Harrison naturally enough associates the increasing employment of coal with the use of chimneys, which had been very uncommon, except in the religious houses and manor places, until the previous generation, insomuch that not above two or three, if so many, were to be found "in most uplandish towns of the realm."

In the course of the sixteenth century coals rose from 2*s.* 6*d.* per chaldron at Newcastle to 6*s.*, and afterwards to 9*s.* per chaldron. This great increase in price has been ascribed to a monopoly arising out of the leasing of the manors of Gateshead and Whickham by Queen Elizabeth. In reality, however, the advance which then took place was one common to other articles as well as coals. Wheat, which in 1560 was only 6*s.* 8*d.* per quarter,* had risen in 1610 to 34*s.* per quarter—a regular and not a scarcity price; and

* About 7*s.* 6*d.* and 36*s.* respectively, when reduced to our standard. See Fleetwood: Adam Smith: Collection of price by Sir R. Eden, "History of the Poor."

butchers' meat, in the same period, rose from an average of little more than $\frac{1}{2}d.$ per pound to $3\frac{1}{2}d.$ per pound. A change so remarkable cannot well be passed over without observation. We are to search for the chief cause of it in the diminished value of the precious metals, after the produce of the American mines had been fully spread over Europe.*

Amongst the documents in my possession on the subject of the coal trade, I find a lease from Queen Elizabeth to Sir Nicholas Tempest, of coal mines in Stella, which is called Stelley or Stellington. In this deed sufficient *wayleave* and *stayleave* are granted, with power to lead away the coals by all kinds of carriages. Liberty is also given to drive adits ("sougheads") for draining the coal, and it is stipulated that sufficient pillars ("columnæ vel pillers") shall be left to support the roof— a clause which, by a kind of prescription, holds its ground in modern leases of coal mines, though the existing custom being to remove all the coal, and consequently, as a general rule, to leave no permanent pillars, a stipulation of the nature in question can only be construed to mean the leaving of pillars to maintain access to those parts of the mine where the coal remains unworked.

Elizabeth, in 1600, incorporated the Society of *Hoastmen*, who had, however, existed as a guild or fraternity in Newcastle from time immemorial. Their incorporation is set forth in a clause of the great charter of this Queen to the town of Newcastle-upon-Tyne, and forty-eight persons are named for the better loading and disposing of pit coals and stones upon the Tyne. They bind themselves to pay to the Crown that shilling per chaldron which continued so long afterwards to be a peculiar grievance of the trade of the Tyne, for it was not extended to other ports shipping coals. We also find that the price of best coals was limited to 10*s.* per chaldron, and of second-class coals to 9*s.*, and for the most inferior kind, the "*meane coles*," as they are called, not more than 8*s.* per chaldron. Up to this epoch there were no railways, the coals being conveyed from the pits in carts or wains; and it is made a by-law of the company that the "cole waynes" shall be measured and marked, "several bringing only six or seven bolls, whereas,

* The mines of Potosi, from which the Spaniards drew so large a supply of silver, were opened by them in 1550. From 1570 to 1630 was the period during which the influx of precious metals from America settled to its level.

time out of mind, they did usually carry eight bolls to all the staythes upon the ryver of Tyne." The eight bolls here mentioned are the third part of a Newcastle chaldron of the present day. I may here remark, that a very inadequate idea of the coal trade of the period under consideration is conveyed by the misinterpretation of a statement first extracted by Brand from the Hoastmen's books, and purporting that in the year 1602, that company was to vend 9080 tens of coals. This has since passed for *tons* instead of *tens;* though the two denominations of weight are most materially different. When we find that, in 1615, 400 sail of ships were employed in the Newcastle coal trade, it is clear that a much greater quantity than 9080 *tons* of coal yearly must have been carried by them; in fact, a fourth part of the number would convey the quantity stated in one voyage, assuming them to be of the very low average burden, even for that day, of only 100 tons each.* We must assume the ten of 1602 to have been equal to very nearly twenty-one tons (as will presently be shown), and we shall then have the vend of the same year, amounting not to 9080 tons, but to 190,600 tons.

It may not be amiss to place upon record here the various denominations of measure and weight for the sale of coals which have subsisted in the Newcastle coal-field. The original chaldron was 2000 lbs. weight.† We accordingly find the chaldron rated in 1530 at six bolls, in a lease of mines at Elswick from the Prior of Tynemouth. In 1600 we find "the coal waynes containing eight bolls, and some, scarce seven bolls." (Books of Hoastmen's Company.) In point of fact, seven and a half bolls of coal are equal to very nearly 2000 lbs. weight, per modern custom-house admeasurement. And we thus perceive how the keels were said, so early as 1421, to carry twenty-two or twenty-three chaldrons; twenty-three chaldrons, of 2000 lbs. weight each, being equal to nearly eight modern Newcastle chaldrons, of 53 cwt. each. If from the London chaldron a right proportion is deducted for *heaped measure*, we shall have left almost exactly 2000 lbs. weight, as above.

The coal boll has been raised upon a measure equal,

* The average cargo of the vessels employed to carry 4000 chaldrons of coals for the poor of London in 1636, was 8½ keels, nearly. An original list of the ships, masters, and cargoes, is in my possession.

† Mensura quædam grandior, præsertim carbonum, bis mille pondo constans.—*Skinner*. *Carbo* here means *charcoal*.

probably, to that of corn: it was as much as a man could conveniently carry; for in weights and in measures of capacity, we can trace the same kind of reference to some standard constituting an animal effort, as we do in the lineal dimensions of feet, hands, &c.* When "barrows" were brought into use, the quantity conveyed increased, and along with it the boll also increased. In some old grants this measure is specified as the "bowle or barrowe." By statute 30 Car. II. c. 8, the bowl-tub of Newcastle is declared to contain twenty-two gallons and a pottle ($22\frac{1}{2}$ gallons), Winchester measure: it was twenty-seven inches in diameter, and there were twenty-one bolls heaped measure to each chaldron. By the same Act the content of each wain is to be seven bolls, and each cart three bolls and one bushel heaped measure, and three wains or six carts are to be a chaldron.

The *keel-load* long continued to be the principal standard of measure. Thus, in 1604, an order of the Privy Council is addressed to the Hoastmen of Newcastle, to prevent loading ships by bulk, instead of by "the juste and trewe measured kele:" and another order, in 1613, directs, that "coals are to be sold onlie by the measuredde keles." (See Appendix, No. IV.)

It is manifest that the *kele* and the *ten* were at this period synonymous, and that the keel carried ten of those chaldrons, the size of which is afterwards particularly specified in the Act of 30 Car. II., and which constituted the then Newcastle chaldron. It is also clear that the keel-load consists of ten scores of the bolls of that period, twenty-one to a score.† And we are thus enabled to trace the origin of that singular denomination of quantity and weight, the modern *ten*, which continues to be generally used in calculating the rents of coal mines in the North of England. After the introduction of railways in the middle of the seventeenth century, the *ten* is referred sometimes to the fother, or waine, and sometimes to the waggon. I find in a lease, Tempest to Emerson (1684), a *ten* specified to be "forty fothers, each fother a wain-load containing seven

* Agricola has several drawings of the miner at work with the *alvei* or bowl-vessels beside him; they were carried either on the shoulders, or fastened to the back by a rope passing round the chest, but were used only for short distances.—*De Re Metallicâ*, p. 90, ed. 1561.

† These bolls were less than those of 12 Queen Anne, in the ratio of 100 to 91.

bolls and one bushel of coals at the pits, Newcastle usual coal measure." This is three hundred bolls. In an undertaking by Albert Silvertop (1703), the ten is declared to consist of "twenty-five waggons of fifteen bolls to the waggon:" this is 375 bolls. The present *ten* appears to have become fixed towards the middle of the last century. In 1755, in an estimate to work the Brunton colliery in the Whorlton seam, by John Watson, the ten is stated as "twenty-two waggons of twenty bolls each," being 440 bolls. In 1756, in an estimate to work Hartley colliery, the ten is made to consist of "ten score of eighteen peck corves," which is equal to 450 bolls.

The enlarged capacity of the *Ten* is capable of explanation on the ground that, as mining facilities increased, the *bowle* or *barrowe* was replaced by vessels of larger content; the sixteen peck corf, for example, was generally employed in drawing coals during the last century, and as the sixteen peck corf contains two bolls, ten score of those corves are equal to 420 bolls, which is still a common size of the Ten.

By statute 6 & 7 Will. III. c. 10, the Newcastle chaldron is declared to consist of its present weight of 53 cwt. The weight carried by wains to be 17½ cwt., and by carts 8¾ cwt.; and three wains, or six carts, are to make a chaldron.* By the 12 Anne, c. 17, the coal bushel, the standard of which was to be kept in the Exchequer, was provided to contain one Winchester bushel, and one quart of water, to be heaped measure. Three of these bushels made a sack, and three of the same bushels made a Newcastle coal boll, so that the Newcastle coal boll and the London coal sack (twelve of which made a London chaldron) were of the same capacity precisely.

The *load* consisted, and in some remote localities of Northumberland and Durham still consists, of as much weight as can be carried on the back of a pack-horse. The *fother*, on the contrary, is properly as much as can be conveyed in a cart with one horse.

The proper measure of coals (now legally sold by weight) was a subject of perpetual altercation, both at Newcastle and in London. An Act of Henry VIII., 1543, recites, "that of late years not only the king's highnesse, but also

* In this Act, however, the Newcastle chaldron is made to consist of *both* 52½ cwt. and 53 cwt.

alle his lovinge subjects, have been much deceived in their fuell that they have boughte, by the greadie covetous myndes of ye sellere of ye same, as well by the untrue measures of coales lytle and lytle contynuallye mynished;" and proceeds to enact, that "everie quatere of coles shall contayne in cleane coles eight bushells at the least." Yet so imperfectly was the subject understood, that even three quarters of a century later (in the year 1622), we find the ratios of the Newcastle and London chaldrons stated by the Privy Council to be as four to eight; by the farmers of the coal revenue, as four to six; and by the coal shipment surveyors at Newcastle, as four to seven.* An order of Privy Council on the subject is inserted in Appendix No. IV. Charles Kyllgoure, the farmers' collector, complains that ships are continually in the habit of clearing for a smaller number of chaldrons "than the ticket expressed by three, five, six, and ten chaldrons." In one instance he mentions a ship clearing for 25 chaldrons, which was formerly entered at 46 chaldrons. In the bitterness of his heart he affirms that "there is no truth in collieres." It is perhaps satisfactory to find that this very libellous accusation did not originate in modern times, being spoken of by Kyllgoure, as an old saying even in his day. His employers, the farmers of the coal revenue, certainly appear to have been sufficiently attentive to their own interest: for we learn that when 4000 chaldrons of coals were sent to London for the poor, they, the farmers, put in their claim for defalcation of duty on this quantity as being Newcastle chaldrons, whereas they were really delivered as London chaldrons.

Other defalcations claimed by the farmers are equally remarkable. They "defalke," says the Solicitor-General in his observations on the subject, "for the duties on coals sent to places where no duties are payable," and a useful person, named "Skelton," was employed by them to find out defalcations, and to make affidavit of the same, at the rate of 2*s.* 6*d.* in the pound on the amount of such defalcations. The industry of Skelton appears to have been unremitting, for in one year "defalcations were made for

* The correct proportions were as 4 to 6½ nearly, according to the data furnished by the preceding investigation. The then Newcastle chaldron was, in fact, 42 cwt., and such was the weight carried by the first coal waggons used after the introduction of railways.

more coals exported than are entered in the Customs Books to be exported."

Neither do the ship-masters escape censure. It was not uncommon for them to clear a ship for Yarmouth or some other coasting port, and then to take the coals over sea, thus evading the payment of the higher differential duty levied on coals exported, as compared with those sent to the home markets.

There are also charges of the mixing of coals, which incur the censure of the Privy Council, upon the report of the surveyors. The coal-owners, with perfect coolness, admit and justify this practice. "There is a necessitie," they say, "for some myngelynge, for the best and chieffest coales are nott usefull without some alloy or mixture." But the surveyors do not yield the point: they state, "There be two sorts of mixture of coales usually practised at Newcastle. *The first is of good coales myngled with good coales, when a good coale that ariseth small is myngled with a like good coale that ariseth greater. And when a swift burnyinge good coale is mixed with a like good coale that burneth slow.* The second is the "mixture of base low-priced coales, of 4*s.* "or 5*s.* a chaldron, or of black earth, slate, stones, and other "unmchantable and unfuellable stuffe, with good coales of "5*s.* and 6*s.* the chaldron." The former mixture of good coals with good coals, is allowed by the sentence of the Star Chamber recited in the patent, and *the latter mixture of good coales with base and unfuellable stuffe is only prohibited by his Majesty and their Lps.* "And what more certeyne distynction cann be required, or more usefull or convenient?"

It is with the chronicles of the coal trade as with other histories: they are most copious in detail when matters go on least smoothly. In the beginning of the seventeenth century a considerable rise took place in the price of coals, which was ascribed to monopoly or "combynation." An attempt has been already made to show that coals did not advance in a greater ratio than other articles, under the operation of that great change in the value of money, which resulted from the influx of bullion after the opening of the American mines. But it does not seem to have been understood in that day, more than it is in our own, that a coal-trade regulation has a no more mischievous object than that of adjusting supply to demand, and accordingly then, as now,

the coal-owners were the objects of much misplaced obloquy for using the same liberty in the management of their affairs, which is asserted and exercised by every other commercial body.

A manuscript memorial of 1605 thus describes the machinery of a regulation then established: "The hoastmen that deale in coale have appointed eight clarkes, and every clarke hath his quarter where he shall sell and (s)towe (soe) manye, and none of his fellows maye sell until he hath (sold) all his quantity both good and badd att a set price. And that none other shall buy or break their price, (that no) coal owner is to sell any but to themselves, and to (this end) they themselves doe give more than the coal owner would (sell for) to a stranger, for that now no coale owner is a seller to any merchant that would buy but serveth as a st(o)arer to their eight clarkes."

Besides the works of the large coal-owners, little collieries were then worked by a class of persons not much superior to the labourer: of these it is stated, that "they have coales and noe keeles," and consequently, "have noe meanes to sell their coales for want of meanes to lade them."

Thomas Lydell and William Jenison, Aldermen of Newcastle, are represented as the principal actors in this early regulation, the constitution of which seems to have been very effective.

In a manuscript of 1622, we have all the machinery of a regulation, with the quantities or bases allotted to each colliery. The principle of government was the same as in 1605, that of vesting the administration of the trade in a few hands. And for this purpose, and more particularly for the "*management of the vent*," gentlemen were appointed in whom the trade had confidence, and who with their assistants and servants had to superintend and conduct the affairs of the "fellowship." It is specially worthy of note, that *quantity* was invariably made the groundwork of those ancient regulations.

I have inserted a copy of the document in question in the Appendix: it is drawn with great care and ingenuity, is complete in its details, and highly illustrative of the coal trade of that day. If the several quantities of tens stated in it be multiplied by 21, the result will be equivalent tons very nearly. (See Appendix, No. V.)

In 1612, letters patent were granted to Simon Sturtevant "for the making of iron with pit coal and sea coal." In this, as in so many other instances, necessity stimulated invention. The woods of England were fast decaying: wood was sold for fuel in some districts by the pound weight:* and in Elizabeth's reign four Acts of Parliament had been passed to prevent the further destruction of timber, especially in the making of iron.† The period was critical; but the earliest experiments failed, as well in Sturtevant's hands, as in those of Rovenson, Gambleton, the learned Doctor Jorden of Bath, and various others. Dud Dudley, who records those failures, states that he did himself, in 1619, succeed in making, at Pensnet, in Worcestershire, "many tons of iron with pit coal, besides cast-iron works of sundry sorts: and also at two forges, or iron mills, called Cradly Forges, forged the said iron into merchantable good iron."‡ At this period he could not make more than three tons per week from one furnace. However, a patent was granted upon the result, by James I., for thirty-one years: but a series of untoward events, of which a lamentable description is given in the publication referred to, concurred to prevent the success of the undertaking. The author's iron works and inventions were "ruinated by a flood, to this day called the great May-day flood." Then came the shortening of the patent to fourteen years, under the Statute of Monopolies (21 James I.), and the untiring opposition of the charcoal iron masters, by whom, and by others, he was afterwards "ousted of his works and inventions wrongfully, over long to relate." Still he persevered, and erected a new large furnace at Hascobridge, in the parish of Sedgely and county of Stafford, "the bellows of which furnace were larger than ordinary bellows are; in which work he made seven tons of iron per week." But misfortune pursued him: his works were attacked by a mob, who, amongst other acts of violence, "cut his bellows in pieces;" so that with "lawsuits and riots he was wearied and disabled to prosecute his art and invention at present, even until the first patent was extinct."

He obtained a new patent, May 2, anno 14 Caroli Primi,

* *Hollingshed's Chronicle*, Vol. I., p. 359.

† 1 Eliz. c. 15; 23 Eliz. c. 5; 27 Eliz. c. 19; 28 Eliz. cc. 3, 5.

‡ *Dud Dudley's Metallum Martis* 1665.

but met with fresh opposition. Then the wars came on; the author lost his estate by his loyalty; and his former troubles continued to harass him, with the crowning addition of a suit in Chancery between him and his partners. In the meantime, another patent was granted by the Parliament to Captain Buck, for the making of iron with pit coal. In this undertaking Cromwell was a partner, together with many of his officers. They appear to have paid court to the author, and got him to go to the Forest of Dean, where their works were established: and where he continued until "all their pots and inventions failed," the company preferring, it appears, their own course to the one advised by him, and engaging "one Edward Dogney, an Italian, an ingenious glass master of Bristow," to make their pots of glass-house clay: but the author adds, that the Italian failed, "and all his pots were broken." Captain Buck and his party appear to have discontinued their operations about the year 1656, when the project was taken up by Captain Copley, but was dropped by him in 1657; and after this, adds the author, "all men desisted from the invention of making iron with pit coal and sea coal."

In the beginning of the following century (1713), we find Mr. Abraham Darby making iron with pit coal at Colebrook Dale; but the largest proportion of the iron used in England was still brought from Russia and Sweden: the furnaces decreased from 300 to 59; and in the year 1740, only 17,350 tons of pig iron were made in England.

Coke, a preparation of coal which is now so well known, had been used for several purposes, and especially for drying malt, in and even previously to the year 1640, but no sufficiently practical result had been arrived at in making iron with it.* The cause of failure resided more in a collateral circumstance than in the coke itself. The furnace blasts employed in smelting iron had been feeble.† In earlier times a

* Coke appears to have been used for drying malt in Derbyshire, so early as 1640; straw had been previously employed, as in other places, for this purpose; but the employment of coke in the process greatly improved the quality of the malt, "and made that alteration which all England admired," according to Houghton, *Husbandry*, I., 101.

† In consequence of the blowing apparatus of the ancients being so inferior to ours, it has been found worth while to resmelt the scoriæ left by them. They were not able, properly speaking, *to fuse in quantity*, so that *cast-iron*, now so extensively employed, was a modification of the metal with which they were unacquainted. —See *Scrivenor's Hist. of the Iron Trade.*

Great heaps of scoriæ, the remains of their smelting operations, are found in various parts of Durham and Northumberland.

pair of bellows made of a goat's skin, and pressed with the hand, furnished a sufficient supply of air to suit the imperfect process of extraction then in use. It does not appear that the water blast (*trombe*), though applied on the Continent, was ever much in vogue in this country. We find Dudley's contemporaries employing large bellows, and endeavouring to attain more powerful means of blast. Copley, in 1656, complains that he had paid "divers hundred pounds to engineers for the making his bellows to blow." And even when the capability of procuring a stronger blast by means of machinery had been realised, it was still inadequate for coke furnaces, which require a much more forcible blast than those where charcoal is employed. The steam-engine and blowing cylinder supplied the final requisites, and the iron trade, which had been very nearly extinguished in this country, from the literal want of fuel, revived with surprising vigour. In 1788, 61,300 tons of pig iron were made, of which 48,200 tons were smelted with coke, and 13,100 with charcoal. The introduction of the hot blast by Mr. Neilson, in 1829, has completed what was wanting in the relation of coal and iron, by enabling the ores of the latter to be smelted with raw coal.*

Since the extension of the railway system, the quantity of iron made in Great Britain has been upwards of two millions of tons yearly, requiring for smelting, and for the subsequent conversion of the greatest part of it into bar iron, and of the remainder into various other purposes, at least twelve millions of tons of coals; and we cannot perhaps form a clearer conception of the value and importance of our coal fields than by estimating how much of another description of fuel might be required for this great national manufacture, which was so nearly being extinguished only a century ago.

It has been calculated that a ton of coal yearly is equal to the produce of at least four acres of growing wood, supposing the wood fit for cutting as fuel every sixteen years. Twelve millions of tons of coal yearly are therefore equal to the produce of 48,000,000 acres of wood. But the entire area

* It is curious that the Peruvians, before the arrival of the Spaniards, had a practice of heating the air in their smelting operations. Their furnaces were perforated with holes, and beneath each hol was a projection of the stone work, c which burning charcoal was laid to he the air before it entered the furnace.

of Great Britain is about 56½ millions of acres. Therefore nearly the entire surface of our island would be required to grow timber sufficient for the consumption of the iron manufacture alone. It is by such comparisons that we are made aware of the immense resources which the coal fields of this country have placed at our disposal. Amongst other curious particulars, Dudley states the price of bar iron in his day to be from £15 to £18 per ton. He also says, that coals and not wood fuel are used in making bricks, which had come to be much employed in building, instead of wood. Glass was also made with coals, "whereas formerly many thousand loads of wood were spent in the making thereof." Pit coal was used in "brewing, making copperas, alum, salt, casting of brass and copper, dyeings, and many other works, all of which, not many years since, were done altogether with the fuel of wood and charcoal."

We have now to resume the chronological order of events: it will be observed that, for the sake of perspicuity, I have preferred following down to modern times the thread of such prominent occurrences or new applications as mark important epochs in the coal trade. The apparent awkwardness of returning to older dates involved in this arrangement may perhaps be compensated by the advantage of a connected narrative flowing down with events instead of one recurring many times to the same subject.

We have seen that the vend of coals from Newcastle, in 1602, was 190,600 tons. A statement, inserted in the Appendix, No. 6, furnishes the means of deducing from it the vend of the year ending the 21st December, 1609, by a comparison of sums received with the known rates of duty. An attempt was made in the first instance to saddle the several ports of Sunderland, Hartlepool, Stockton, Blyth, and even Whitby, as well as Newcastle, with the coastwise duty, on the ground that these ports were members of the port of Newcastle. But this classification having been afterwards abandoned, the shilling duty came to be regarded as a tax peculiar to the Tyne. Before the limitation took place, however, the coasting duty had already been charged at Sunderland and Blyth, and we are thus enabled to determine the vends of those ports in the year mentioned, as follows, reducing the quantities to tons upon the principle before explained:—

VENDS FOR THE YEAR ENDING CHRISTMAS, 1609.

	Coast Tons.	Foreign Tons.	Total tons.
Newcastle . .	214,305	24,956	239,261
Sunderland . .	9,265	2,383	11,648
Blyth . .	855	Nil.	855

From Christmas, 1621, to Christmas, 1622, we find by deduction from Baker and Kylgour's Balance Sheet (Appendix No. 7), that the coast vend from Newcastle was 301,785 tons, and the foreign vend 43,755 tons. In 1630 the vends fell short, being to the coasting markets 253,380 tons, and to the over-sea markets, 36,542 tons.

Stockton is first mentioned in the balance-sheet of 1622, as exporting ten chaldrons of coals in that year.

Out of a number of accounts belonging to the farmers of the coal revenue, I select one of 1617, which shows that an export trade in coals (though on a very trifling scale) was then carried on in several ports of Great Britain, as well as Newcastle and Sunderland. From this document it also appears that the farmers made a profitable speculation of the duties; for when a balance is struck on the year's transactions, there remains the sum of £3686 12*s.* 6*d.* to their credit, being £921 13*s.* 1½*d.* to each of the four lessees. The whole receipts for the year are £11,540 12*s.* 7*d.* (See Appendix, No. 8.)

During the necessitous reign of Charles I. there was much trafficking in the coal revenues by way of loans and repayments (eight per cent. interest being always reckoned), between the farmers and the Crown. In the year 1638 an agreement was entered into between the King, of the first part, the Governors, Stewards, and Brethren of Hoastmen, of the second part, and the coal owners, of the third part, which stipulates that *all the coals* shall be sold to his Majesty, his heirs and successors only, or to some other of the fraternity who shall sell the same to his Majesty by the hands of six appointed factors being hoastmen, who were themselves appointed by a governing body of eleven, chosen out of the general fellowship of hoastmen. The King is to pay for every chaldron "according to the water coal measure used in the said port, delivered aboard the ships

of his Majesties subjects, for home or foreign vent 11*s*., and 12*s*. for every chaldron laid aboard the ships of aliens." These prices are stated to be the same "as have been received for years past." The mines were rated by the governing body of eleven, to provide a certain yearly quantity each; and the same body acted as a tribunal to settle all differences. The stipulations are numerous, one being, that an advance in price shall take place at the end of any seven years, if it can be shown that the "expense of wynning and "working hath been in anywise increased. No persons to be "allowed to vent coals to be shipped, but such as are freemen "of the said fraternity, and the coals their own; nor shall "they vent the same in any other manner than according to "these presents." In Appendix No. 9, I have made an abstract of this skilfully drawn instrument, constituting as it does, one of those attempts at monopoly which contributed so largely to overturn the throne.

Probably no town suffered more than Newcastle, from the civil wars between Charles I. and the Parliament. In addition to the suspension of trade, it stood on the list of malignant towns, hostile to the Parliament, and was dealt with accordingly; being considered, as stated by Gardner, "the principal inlet of all foreign aid against the Parliament;" while its friends were, on their part, disposed towards the adoption of measures of still greater mischief in their ultimate consequences; for the Marquis of Newcastle, who commanded the royal forces within the town in 1642, endeavoured to fire the mines in the vicinity, a catastrophe fortunately prevented by General Lesly, then in command of the Scottish army, whose troops captured the party destined to this service. The Marquis prohibited, however, as far as he could, the shipment of coals to London, on account of the favour shown by the inhabitants of that city to the Parliament. A great scarcity and rise in price ensued, so that Parliament, in 1643, made an ordinance to supply the poor and others with wood, in default of coal: and a second ordinance in the following year provided for the supply of the metropolis with peat and turf. Coals had risen in London to the excessive price of £4 per chaldron.

Gray, who wrote his "Chorographia" at this period (1649), states that many useful inventions, not previously known, had been brought to this district by a Master Beaumont,

who appears to have deserved a better fate than that of "riding home," as he adds, "upon his light horse, after having spent all his monie."* Amongst these inventions I am disposed to place the railway in its original form, with wooden rails and sleepers. It has been usually considered that the first railways of this description were constructed in the year 1671. I have, however, documents of an earlier date in my possession, in which allusion is evidently made to railways. One of these, dated in 1660, is a bargain and sale from Sir Richard Tempest and others, to William Carr and others, of 10 keels or lighters, and a quarter part of the wood or timber laid upon trenches, bridges, and waggon ways, or unlaid upon the same. On the contrary, the division deed of Winlaton Lordship, in 1632, makes no allusion to railways, but provides only "free egress and regress for ways and working in common as heretofore."† But as Gray expressly mentions, in the light of a novelty, "waggons with one horse to carrye down coals from the pits to the staiths," and in saying so could not refer to common wains, which had been long in use, we may, from a comparison of all the statements, conclude that wooden railways were introduced between 1632 and 1649; but they do not appear to have been in general use until 1670 or 1680. Before their introduction we are told that the collieries of Kenton and Benwell employed between four and five hundred carts and wains each, in carrying coals from the pits to the river Tyne.

These early railways, known in other parts of the kingdom as the "Newcastle Roads," consisted of wooden rails about four inches square, laid upon sleepers. The ground was made with as regular a descent as was practicable without incurring a great expense, the object being to run down the laden waggon by its own weight to the place of shipment, and to employ a horse in bringing back the empty carriage. In this manner a considerable advantage was gained over the common wains, which contained only 17 to 18 cwts. of coals, while the waggon carried at first 42 cwts., and afterwards more. The waggon itself was made

* Chorographia: a Survey of Newcastle-upon-Tyne, 1649, dedicated, "Dilectis Burgensibus et probis hominibus Novi Castri super Tinam." It must be confessed that Gray's contemporary, Ralph Gardner, is much less flattering in his epithets.

† MSS. *Townley Papers.*

of wood, with a brake or convoy to regulate the speed down hill. In shape it resembled a modern coal waggon. The wheels were wooden ones, with an iron axle fitted into them, and even down to 1765 two wooden and two cast iron wheels were mostly in use, the wooden ones being retained for the application of the brake or convoy. The

OLD COAL WAGGON AND RAILWAY.

cost of construction of the wooden railways did not exceed from £400 to £600 per mile. Such was the first appearance of those lines of railway which have subsequently, and by gradual steps, been improved into their present form, though still retaining the original name given to the *wooden rail*. The substitution of iron for wood was not carried out until a century and a half after their first invention, though it was a common practice to nail a thin iron plate upon the rails to equalise the friction, and to protect the wooden surface where the curves were considerable. Even within the last dozen years the wooden railway was still to be seen in full operation in this neighbourhood.

The same author mentions *bore-rods;* a most useful invention for proving the depth and thickness of the coal strata without the risk attending a great outlay in actually sinking to the coal beds. This apparatus constitutes the true divining rod, the successor of that which the miners of the middle ages were so fond of employing, but which disappeared with the cobolds and the other spirits, mischievous or friendly, that frequented the mines of these days, and were gravely assigned as a reason for abandoning several works of a profitable description.*

* "I have formerly," says Hooson, "heard the old people say that those creatures they call Fayries were much more frequent than now adays they are, but are supposed to be frighted or driven away by the noise of the miners blasting underground."—*Miners' Dictionary*, 1747. We are at no loss to discover the true nature of these mineral goblins, when we are told that one of them showed itself in the shape of a pale horse of a threatening aspect, which killed the miners by its

We have a very clear account of the state of coal mining in the latter part of the seventeenth century, from various sources, but more particularly from the "Compleat Collier."* There were then no underground railways or horses, the coals being dragged to the bottom of the pit, by one or two persons, in corves placed on sledges. The coals were drawn up the pits by horses in a whim gin, and in a pit of 40 fathoms deep, eight horses were required every day to draw 21 scores of coals (about 90 tons), in corves made of hazel rods with wooden bows, carrying 14 or 15 pecks each.†

The cog and rung gin also continued in use at that period, and for some time afterwards. It was less simple in its structure, and was so adapted that the horses working it travelled *round* the pit, over which the rope roll was placed.

The author alludes to explosions by saying that blasts sometimes do take place from the "sulphur or surfit," but does not describe any artificial ventilating power, though he advises the air "to be carried forward with the works, and not too much liberty given it, for want of stoppings, to disperse itself from the works we are in hand with."‡

For lifting water he mentions water wheels and wind mills, but prefers horses. A common method, however, of raising water from the mines was by a large axle across the pit's mouth, over which was an endless chain, to which were attached a number of oblong wooden buckets or troughs, which were continually being filled at the bottom and discharged at the top as they turned round the great axletree.

breath: and of another species, the most formidable of all, the "'black frocks,' engendered of a thick and heavy atmosphere." Their malice was to be overcome by fasting and prayer; but no doubt an active circulation of fresh air would have proved as effective an exorcism.

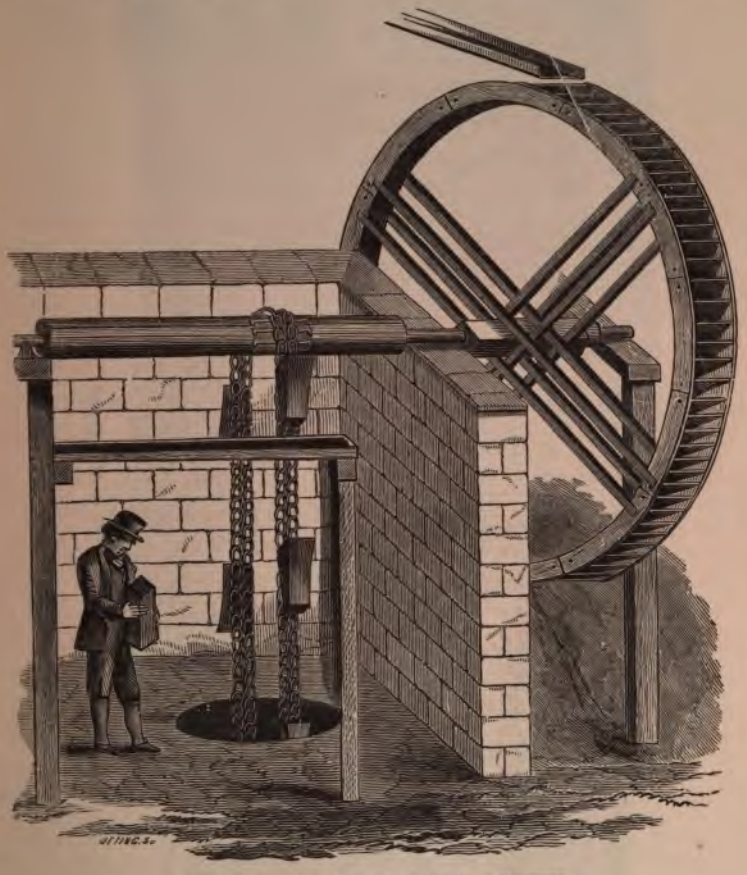
* "The Compleat Collier; or, the Whole Art of sinking, getting, and working Coal Mines, &c., as is now used in the northern parts, especially about Sunderland and Newcastle. By J. C. Loudon. Printed by G. Conyers, at the Ring, in Little Britain, 1708."

Mr. M. A. Richardson, of Newcastle, reprinted this little book in 1846.

† The corf is a very old mining implement. It is mentioned by Agricola (Corbis, a basket made of twigs). It is now almost entirely superseded by wooden or iron tubs, though in common use a few years ago.

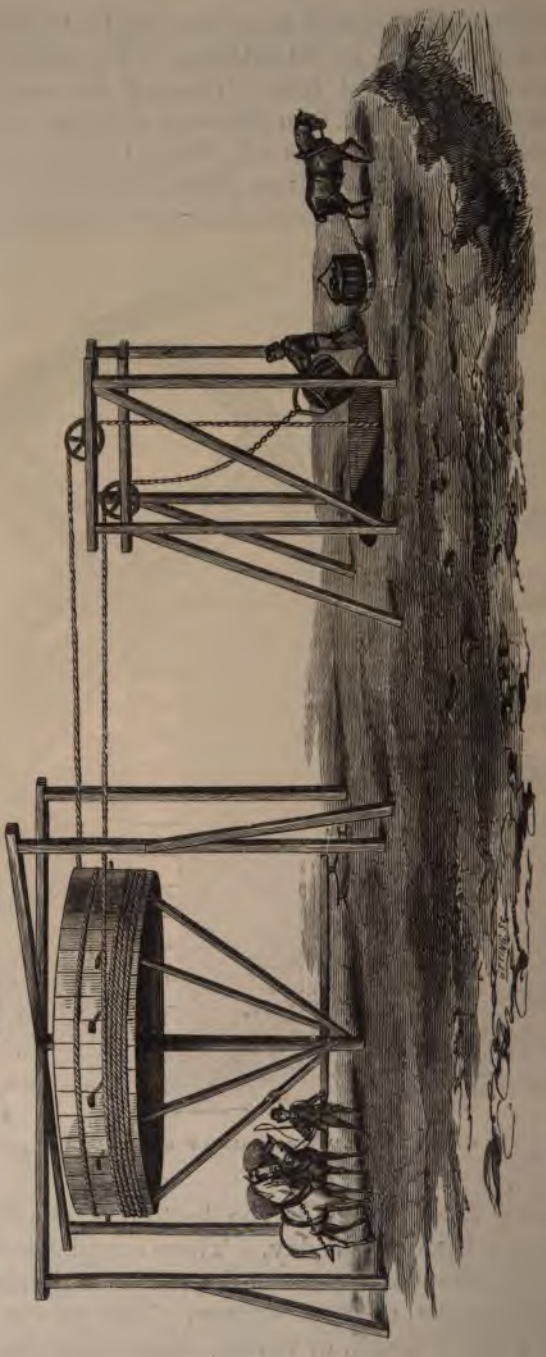
‡ The Fatfield explosion took place at that time, and is thus described by Dr. Charlett, in the *Phil. Trans.* for 1708, Hutton's Abridgment, vol. v., p. 450. "On Wednesday, the 18th August, 1708, at Fatfield, in the parish of Chester-le-Street, about three o'clock in the morning, by the sudden eruption of a violent fire which discharged itself at the mouths of three pits, with as great a noise as the firing of cannon, or the loudest claps of thunder, sixty-nine persons were destroyed in an instant." This is the earliest explosion in our coal-fields of which we possess an *authentic* record.

The coal pits at that period were from 30 to 40 fathoms in depth, and a few 50 or 60 fathoms. The deeper shafts were drained by several lifts. Thus, if the coal was 40 fathoms from the surface, two pits were sunk at a short distance from each other, one of 20 and the other of 40 fathoms. The water was then lifted from the bottom of the deeper pit to a drift communicating with the other, and

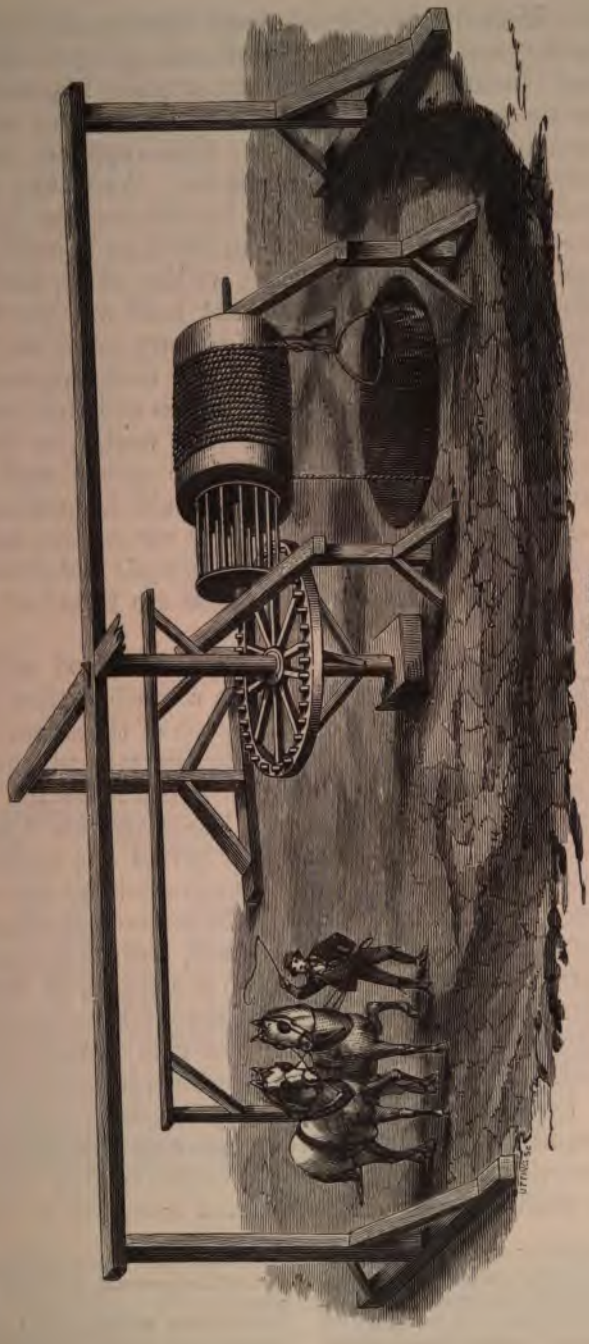


WATER WHEEL WITH CHAIN OF BUCKETS.

flowing along this channel to the bottom of the shallower pit, was thence lifted to the day. These complicated devices show the difficulty that was experienced in contending with water—the miner's greatest enemy. The power applied was either a water wheel, or horses, where water was not to



WHIM GIN.



COG AND RUNG GIN.

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On comparing the mining practice described with that pursued in another country at even a much earlier period, we shall find that, until the great epoch of the steam engine, our English system was by no means greatly advanced. I allude to Germany, which may be regarded as the parent and classical country of mining. We learn from Agricola's work, written in 1550, that at that period the applications of machinery in the German mines were both numerous and complicated. They had not only the common horse gin, but several applications of the water wheel, both to the drawing of the produce of the mine and to the lifting of water, as well by means of the common pump as by chain pumps and rag wheel work; they employed also the water wheel with double buckets arranged in reverse order, for the purpose of more conveniently changing its motion, a method not brought into use in the Newcastle coal field until about two centuries afterwards. For ventilation they employed bellows with attached air tubes, and a variety of applica-

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WATER WHEEL WITH DOUBLE BUCKETS, FROM AGRICOLA.

* Speaking of our English metallic mines in his time, Hooson says, "We do not know of anie thing material or useful that has been found out for the better, than what has been left us by our forefathers; but rather much imparede by neglect and idleness." A great check was given to the progress of metallic mining in Europe by the discovery of the richer mines of America.

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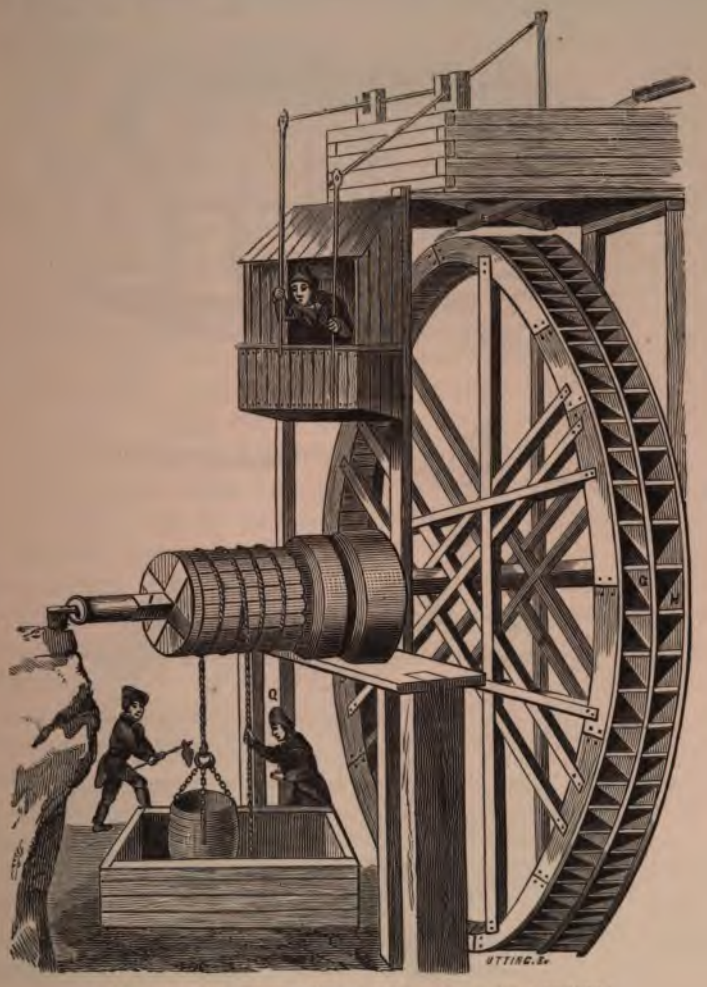

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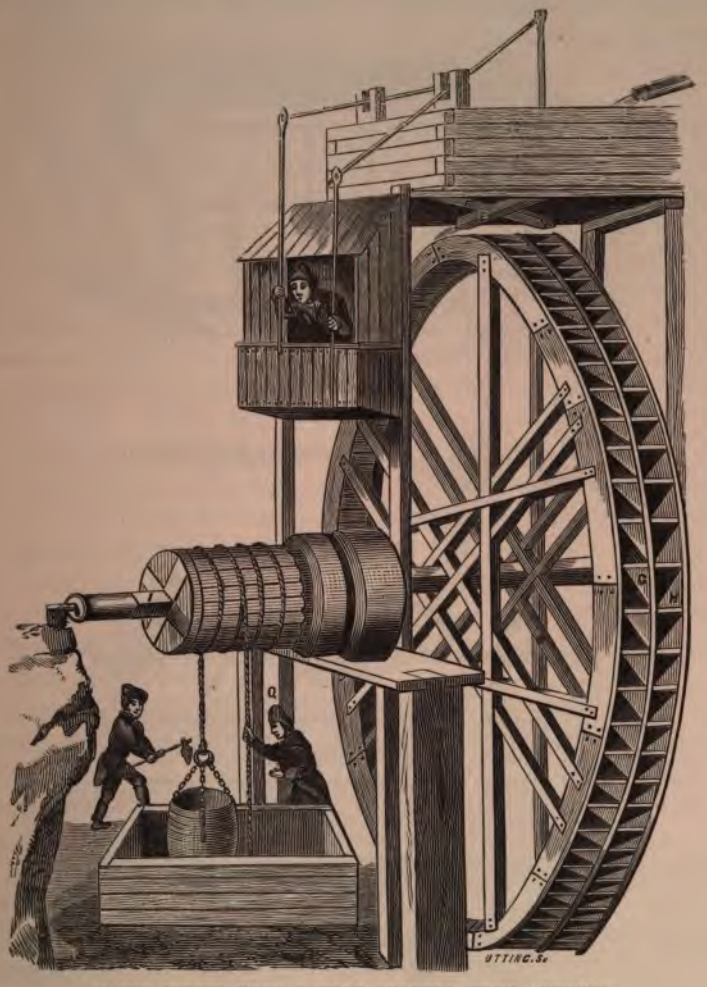
* This collier of the olden time speaks of "horses being six or seven pounds a piece; score price for hewing, 10*d.* to 1*s.*, fifteen peck corves; shift work, 1*s.* per shift; 'overman's wages,' 8*s.* per week;" and lastly, "the viewer well deserves his 15*s.* or 16*s.* per week, if he has care and parts."

Coals were at that time 10*s.* 6*d.* per chaldron (unscreened) at Newcastle.

tions resembling in principle the fanner of the winnowing machines—instruments which are still, for common purposes, in use. They had also carriages with wheels underground, a notable feature of superiority over the sledges made use of in our coal mines.*

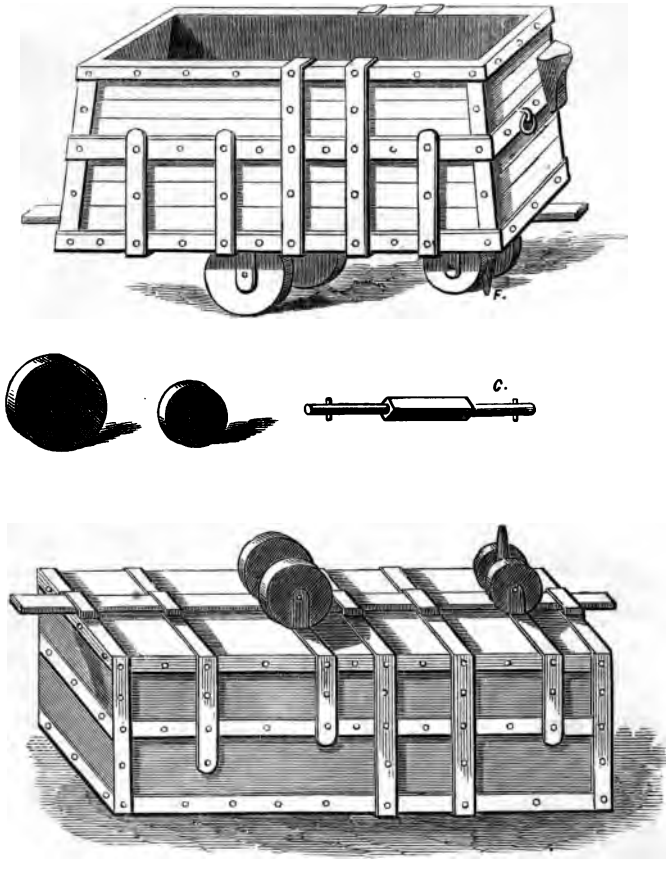


WATER WHEEL WITH DOUBLE BUCKETS, FROM AGRICOLA.

* Speaking of our English metallic mines in his time, Hooson says, "We do not know of anie thing material or useful that has been found out for the better, than what has been left us by our forefathers; but rather much imparede by neglect and idleness." A great check was given to the progress of metallic mining in Europe by the discovery of the richer mines of America.

Their methods of conveyance at the day were however unimproved; besides common wains, they continued to use sledges for this purpose; they also carried the ore on the backs of horses, of men, and even of dogs.

In addition to the proofs already given of the backward condition of British coal mining at the close of the seven-



UNDERGROUND TRAM, FROM AGRICOLA.

teenth, and the beginning of the eighteenth century, it may be mentioned, that when, in the year 1708, a plan was projected in Scotland, for drawing water from coal mines, by means of wind-mills and pumps, it appears that no person was to be found, north of the Tweed, capable of

giving advice in the matter, excepting John Young, the millwright of Montrose, who had been sent, at the expense of the town, to Holland, to inspect the machinery of that country. It was suggested that if this millwright could not be procured, application should then be made to the "Mechanical Priest of Lancashire."

Again in 1710, the Earl of Mar engaged an engineer from Derby, who recommended the substitution of pumps, for chairs and buckets; but when he left, there could not be found any person in Scotland to put his plans into execution. Yet we have in Agricola, above a century and a half earlier, drawings of pumping machinery moved by water wheels, and *cranks*, and beams; a mode of application which continues to this day to be the simplest, and one of the cheapest modes of draining mines, where sufficient water power can be obtained. The crank and fly wheel of the steam engine are really old applications, which appear again and again in Agricola's figures. The fly wheel was very commonly applied in his day, to the common windlass, or jack roll. "The roll being once put in motion," says he, "is much helped, and rendered more easy to be turned, by the revolutions of the fly wheel." He appreciates accurately the nature of the fly wheel as an equaliser of force, assisting the motive power at those points where, in the course of the rotation, it becomes weakest: and this notion of its use is very clearly indicated by his saying, that it was employed instead of another man; (unus vectiarius versat, *rota* in alterius locum succedente.)

The use of gunpowder for blasting rocks, was not yet become common, though it had been introduced into England about the year 1665, and was partially used in Germany so early as 1613, as we learn from the records of the mining colleges of Freyberg and Misnia.

Many German miners were brought over to this country from the time of Elizabeth, to that of Charles II.; and we cannot doubt that by them the blasting of rocks by gunpowder was first made known in England.*

* In the sixth year of her reign, Elizabeth granted to Daniel Hougsetter and Thomas Thurland full licence and authority to dig and search for mines of gold, silver, copper, and quicksilver. Amongst other operations the patentees opened a copper mine, at Keswick, and were opposed by the Earl of Northumberland on the ground of a previous grant. In a subsequent trial the Crown obtained a verdict; and then Elizabeth, to maintain the prerogative of the Crown, constituted the Society of Mines Royal. Prince Rupert was governor of this society in the time of Charles II.—See Sir John Pettus, *Fodinæ Regales*, 1670.

Agricola, and Père Belon, who wrote soon after him, describe, however, only the old method of softening or splitting rocks by fires of wood or charcoal; a method involving the cessation of work during its operation, and which in principle showed no advance upon the process used by the Romans in their mines, or upon that said to have been employed by Hannibal in crossing the Alps, and which, the former author suggests, might be derived from the practice of the Spanish miners. So great were the inconveniences attending this method, that we are informed by Hellôt of mines examined by him in the Pyrenees, which appear to have been abandoned by the ancients, for no other apparent reason than that of the hardness of the rock. The process made use of for mining very hard rocks before the introduction of gunpowder, was that of either splitting them by fires of wood or charcoal, or rending them by an apparatus called the stook and feathers; in applying which, a hole was drilled in the rock, and the feathers, which were two thin plates of iron, thickening towards the lower extremity, were placed in it; a wedge was then driven home between the feathers, until a fragment of the rock was torn off by its action.

Brand mentions a petition of the "*Woodmongers*" and others, against the hoastmen of Newcastle, in 1662: for up to that time, and even later, the dealers in coal retained this primitive designation.* A tract on the "Frauds and Abuses of the Coal Trade," published in 1743, enables us to fix with tolerable precision the epoch when the more dignified appellation of "*coal merchant*" was assumed by that respectable body, who are the subject of much reprehension in the pamphlet alluded to. "About half a century ago," says the author, "this business of coal merchant was carried on in a manner very different from what it is at present; the dealers in that commodity had not then lost the ancient name of woodmongers, which had obviously been given to them when wood was the principal fuel of the city." The *collier*, however, has not thought proper to change *his* name, which originally implied a charcoal burner; for in a grant from Bishop Langley to Robert Kirkhouse, *Yronbrenner*, in 1430, of woods between Stanlawe Burn aud Crawcrook, for the purpose of making charcoal, we find the oak, ash,

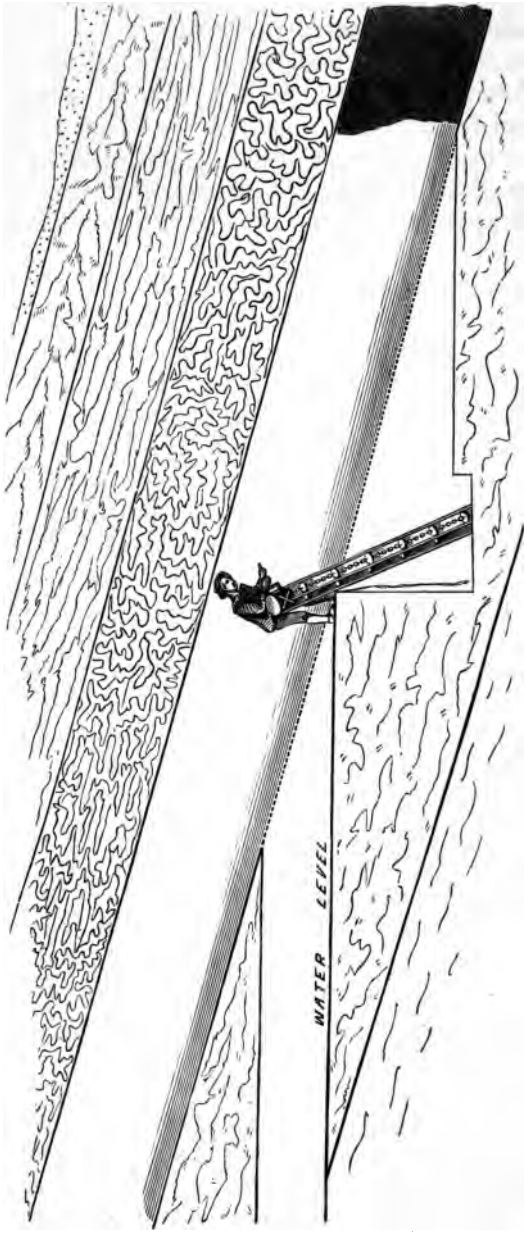
* See also *Gardner's England's Grievance*, p. 205.

hollinwood, apple tree, and crab tree excepted, and also all wood fit for fellyes or beams, which shall always be felled "*before the colyers make cole.*" How strange, we may add, it now appears, to find wood growing upon a coal field, thus appropriated to the making of iron!

The vend from Newcastle averaged 475,000 tons; and from Sunderland 175,000 tons yearly, for some years up to 1710: and from a return made at that time to the House of Commons by the Trinity House of Newcastle, we find that 600 ships of 80 Newcastle chaldrons each, one with another, and 4500 seamen were required to carry on the trade. The beds of coal being thus extensively worked, were fast becoming exhausted in those situations towards the outcrop, where they were capable of being won by adits, or by the inadequate water lifting machinery then in use. Under these circumstances, many ingenious shifts were had recourse to, underground, to obtain coal to the dip of the common level of drainage: rifts were formed in the coal, and cuts made to the deep, from which the water was lifted up to the requisite level, by baling it with wooden scoops, or by such machinery as was then used underground; the principal of which was the chain pump, working in a wooden pumptree, and lifting by hand, from depths generally of from eight to twelve feet. In this manner the miners sometimes succeeded in penetrating, step by step, a considerable way to the deep, so that more modern workings have often suddenly holed into these old mine wastes, in situations where much solid coal was expected to intervene, but which had been already excavated by the industry of the "old man," as such ancient workings are called: and the old workings being generally filled with water, a great deal of damage, as well as loss of life, has from time to time resulted from the inundations which ensued upon the holings in question.

The difficulty of efficiently draining mines has been successfully met in our day; but the inadequacy of the means formerly employed will be appreciated when it is stated that the absolute quantity of water lifted from our mines exceeds that of coal. In particular cases, such as that of the Percy Main Colliery, and Wylam Colliery, the weight of water raised has been about thirty times that of coal, and is in other instances not unusually seven or eight times the

weight of the latter; in addition to which, very large feeders are, in many cases, stopped back in the shafts by cast-iron caissons, or, as they are technically called, *tubbing*, a process



UNDERGROUND CHAIN PUMP. WINNING COAL TO DEEP OF WATER LEVEL.

which I find first mentioned by William Waller, in his account of the mines late of Sir Carbery Price, 1698. In the preface to this work he ascribes to Sir Humphrey Mackworth the credit of applying, at his mines in Glamorganshire, "a *new* method of coffering out the water from his shafts and sinking pits, and thereby preventing the charges of water engines, and also recovering a large vein of coal by that means, which was in vain attempted by other artists." In the "Compleat Collier" (1708) is a description of "the stopping back of shaft feeders with wooden frames;" and the Author also says that he has heard of "iron frames that have been used at Harraton in Durham, made square and deeper than the thickness of a quicksand, to put back these quicksands, which may be of good use, though they must be deare." It was not, however, until 1795 that cast-iron tubbing came much into vogue: in that year Mr. Barnes employed it at Walker Colliery, the pieces consisting of entire circular rims the size of the shaft.* In 1796, Mr. Buddle adopted the more convenient plan of segments, at first connected together by screw bolts, but afterwards by wedging the joints, each segment constituting in fact the voussoir of a circular arch.†

Against an enemy so powerful, all the shifts and expedients of the "old man" availed little; and a crisis approached when new and deeper winnings must be made, by means of some undiscovered and almost unhoped for application, superior, commensurately with its object, in power and economy, to any previously in operation.

Under these circumstances, it is not surprising that the earliest attempts to apply the steam engine, the "invention of raising water by fire," were directed to the drainage of mines. Savery called his little publication, in 1699, on this subject, the "Miner's Friend;" but Newcomen and Crawley, in 1710, were the first who rendered the engine suitable for practical applications, and in 1713 we have an account of

* To Mr. Barnes is also due the introduction of the first self-acting inclined plane, at Benwell Colliery, in 1797.

† There are shafts in which a water pressure of eighty fathoms is sustained by the caissons described. The large feeders met with in sinking through the magnesian limestone, and the half indurated sand lying beneath it, have occasioned the employment of tubbing generally, where that limestone overlies the coal formation. The feeders are in some cases excessive. At the Murton Winning of South Hetton Colliery they were estimated at 7000 to 8000 gallons per minute. In this and in many other instances a rupture of the tubbing endangers the entire colliery.

one being constructed at Byker near Newcastle: at very nearly the same time two others were erected, one at Washington Fell, and the other at Norwood.* The engines were worked at that period by attendants, who opened and shut the valves, until Beighton of Newcastle, in 1718, made his great improvement, by which they were rendered self-acting. Stewart observes, that, in 1714, only four steam engines were in existence, two of which were upon mines at Newcastle.

The introduction of this engine, imperfect as it still was, not only enabled deeper mines to be won, but cheapened the cost, as compared with the drawing of water by horses from shallow mines, in the ratio of about seven to one. The pumps, at first of wood, were afterwards made of cast iron; and the various improvements effected by the introduction of Bolton and Watt's engine, and in the details of pumping, have reduced this particular charge to a very low amount. For many years the Backworth Colliery engines raised water from a depth of between 90 and 100 fathoms, at a cost by a very small fraction exceeding one farthing per ton of the water raised.

A more commodious application of power was also required for the drawing of coals. It had not been unusual to make use of 24 horses in a day, four at a time, for this purpose; and, besides the great cost, the result was comparatively short in proportion to the means employed. Various applications of machinery were therefore devised, particularly one by Mr. Menzies, who made use of a descending vessel containing water to overbalance and bring to the day a corf of coals; the water was discharged at the bottom, and if there was not a day level it had to be pumped up again by the steam engine. Notwithstanding this disadvantage, the plan was a simple and effective one, and continues in a modified form to be partially employed to this day in other districts.† Another application was

* The engine erected at Griff, near Coventry, at an earlier date, was one of Savery's engines.

† Mr. Menzies thus sums up the advantages of his application. I quote from a MS. dated 1753. "Out of the river Tyne there was last year exported above 300,000 chaldrons, out of Wear 170,000, which, with what was exported from Blyth and Hartley Pans, will exceed 500,000 chaldrons; and the coals used at the salt pans, glass works, iron works, and fire coal, I reckon will make the coals drawn up 600,000 chaldrons; so there can be no doubt the expense of drawing up the coals in this neighbourhood comes to £12,000 a year at least, and there can be as little doubt that this machine will save more

that of the water wheel with double buckets, which was really not a novelty, a description and drawing of it having been given by Agricola two centuries earlier. The steam engine was made to lift the water, which drove the water wheel, and a waste of power was thus incurred in lifting the extra column just equal to that required for raising the coals from the bottom of the shaft; in other words, twice the requisite power was employed in the latter operation that would have been required under a better arrangement.

The application of the crank to the steam engine, and the consequent facility acquired in converting a rectilinear into a rotatory motion, supplied the remaining want of the miner, and has in our district superseded other modes of raising coals, except in those small collieries whose shallowness allows of this operation being performed by a single horse, or by the still more primitive device of a jack roll. The use of the steam engine in drawing coals became general at a much later period than its employment for pumping water; insomuch that, in the year 1797, there were still numerous water wheels, with rope rolls on the same axle, at work in the coal districts of Northumberland and Durham.

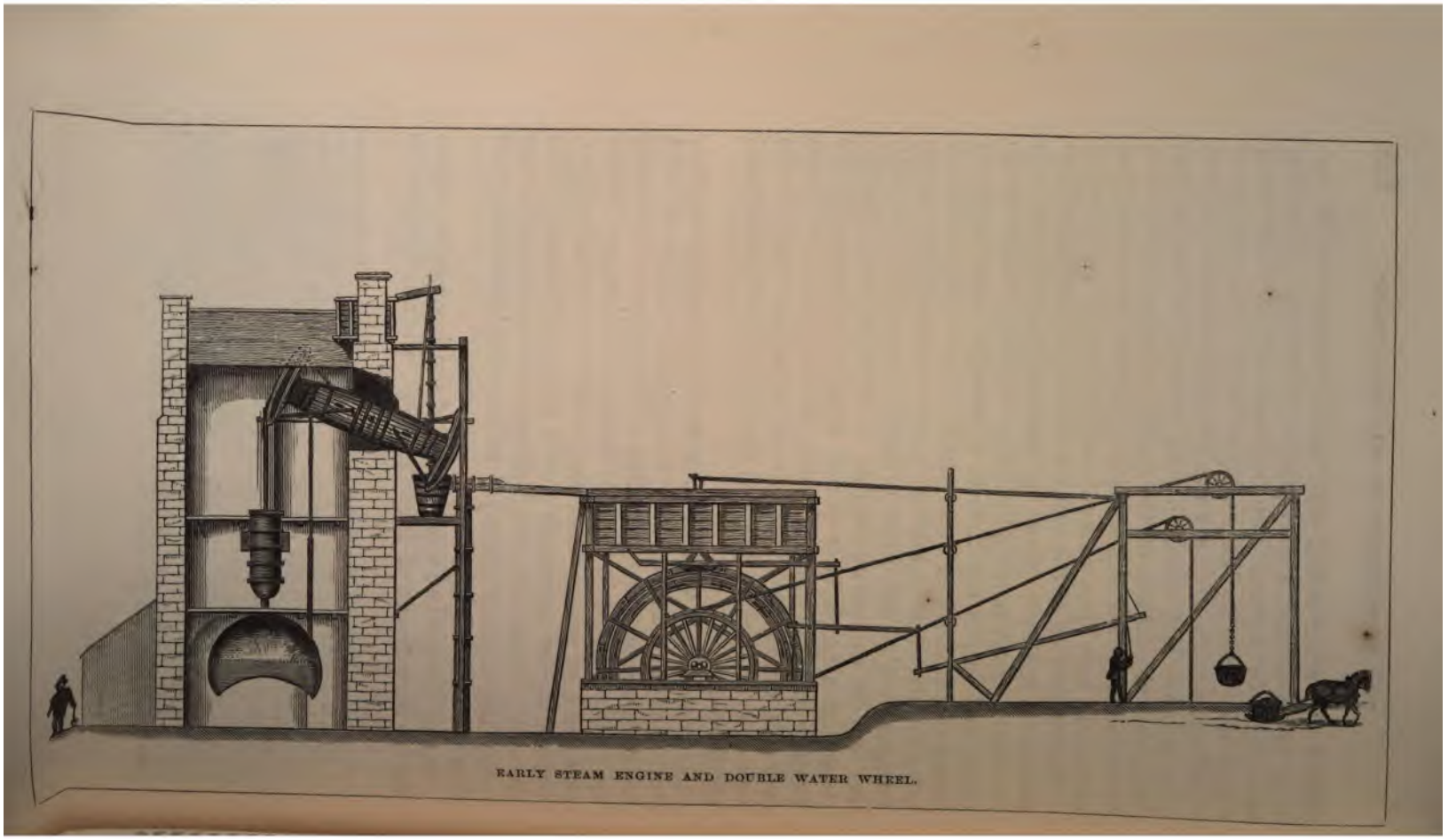
It is not a little curious to trace the increasing employment of steam from the three atmospheric engines of 1714 to the numerous establishments of the present day, when there are employed in the coal field of Durham and Northumberland, in lifting water and coals, 363 steam engines, representing an aggregate power of 21,940 horses. This statement, which is drawn from authentic sources, does not include the engines employed underground, nor those used upon the coal railways.*

One of the earliest applications of the locomotive engine was for the purpose of leading coals. In fact, the merit is

than one half that sum." The expense with horses is thus made to be nearly 5*d.* per chaldron; but he adds, "the actual cost is not less than 6*d.*" The cost of horses was at that time reckoned at 18*d.* per day each. He takes the medium depth of the pits at fifty fathoms, and the expense of drawing the coals at one halfpenny per chaldron on every five fathoms of depth.

* A significant fact, connected with the application of the steam engine, and the consequently increased facilities for procuring coal, was the introduction of the practice of separating the small coals by *skreening*, about the year 1740, by Mr. W. Brown. The skreens were at first made very narrow, but were a good deal enlarged towards the year 1770.

Mr. Brown's name is associated with a great epoch in the coal trade: that of the extended application of the steam-engine to the winning of mines.



EARLY STEAM ENGINE AND DOUBLE WATER WHEEL.

due to Mr. Blackett of having first shown, on the Wylam Colliery Railway, that locomotion is practicable by the adhesion of the wheels to the rails. A doubt on this point was esteemed the chief difficulty in the way of establishing locomotion successfully, until the question was decided by the continued use of the locomotive engine on the Wylam Coal Railway. Mr. George Stephenson's engine was constructed in 1814, for the Killingworth Colliery Railway, and, with the Wylam engine, may be regarded as constituting the commencement of that modern railway system which has been developed in so extraordinary and rapid a manner.*

The introduction of the steam engine revolutionised the system of coal mining. Deeper pits were sunk, and the difficulty of sinking being proportionally increased, it became necessary to diminish this expense by improving the underground roads so as to render fewer pits necessary. Here, however, we may trace the slow progress of improvement. To cope with the additional distance from pit to pit, horses were introduced as a substitute for human labour; and, as a horse dragged only one corf on a sledge, the number of horses employed was in some pits very great, and the cost considerable. From this circumstance arose the introduction of rails underground, and of carriages suitable to travel upon them. These were at first wooden rails, resembling those at the surface; the coals being brought along them on carriages or rolleys, each of which had mounted upon it two or three corves. Mr. Curr of Sheffield was the first who, about the year 1777, introduced iron rails underground, made in that form which is known as the plate rail; he has also the merit of bringing the coals from the face of the works to the day in the same carriage, which was guided in the shaft by conductors. His cast-iron rails were presently adopted at Newcastle, but the old rolley was adhered to; the carriage or tub was not

* Trevithick and Vivian, after inventing the high-pressure engine in 1802, tried a locomotive on the Merthyr Tydvil Railway, which drew as many carriages as conveyed ten tons of bar iron, and travelled at the rate of five miles an hour; but the experiment was not worked out, the main obstacle being that mentioned in the text: to meet which Mr. Blenkinsop, of Middleton Colliery, obtained, in 1811, a patent for the application of a rack or toothed rail, extending along the whole distance to be travelled, into which worked wheels turned by the engine. The Wylam trial, however, under the immediate direction of the late Mr. William Hedley, first gave confidence in the power of the engine to travel without extraneous appliances, such as the one just mentioned, and others having a similar object in view.

for many years afterwards brought upon its own foot from the face to the bottom of the shaft, and thence drawn up to the day in the manner practised by him. It is only recently that those improvements have been adopted, and even at present they are not universal.*

In 1789, Mr. William Jessop constructed the public railway at Loughborough with the form of rail called "edge rail," of cast iron; the upper surface was level, but the under one elliptical, with flanges upon the wheels of the carriages to guide them along the rails. This form of wheel was in fact a return to the old one used on the wooden railways. On the introduction of the cast-iron plate rail, the periphery of the wheel was altered, being made flat; and again, on the application of the edge rail, the old form of wheel was restored.

Malleable Iron Rails, now almost universally used, were partially laid down on the Walbottle Colliery Railway, by the late Mr. Charles Nixon, so early as 1794: they were plain bars of an oblong section, the narrow edge of not more than three-quarters of an inch wide being presented for the wheels to run upon. In 1808, bars of one-and-a-half inch square were laid down at the Earl of Carlisle's Colliery at Tindale Fell: but in 1818 their use continues to be spoken of as a novelty; and their first employment in a large way may be regarded as that of the Stockton and Darlington Railway opened in 1825, and laid principally with malleable iron rails, from the Bedlington Iron Works.†

The winning of deeper mines by the help of the steam engine occasioned, amongst other important modifications of the existing system, a great change in the working details of our mines. In this district the method of working, which has been established from time immemorial, is that known as the board-and-wall system, pillars being left for the support of the roof, with alternate galleries or excavations, from which the daily supply of coal is extracted. So long as the depths were inconsiderable only small pillars were left, and it was not attempted to remove any portion of them afterwards by what is called *pillar or broken working:* but, as the depths augmented, larger pillars of support

* Mr. Curr appears to have been the first who applied fixed engine power, about the year 1805, to lead coals on railways.

† See Mr. N. Wood's excellent work on railways.

were necessarily required, and a proportionate sacrifice of mine incurred. Then began the system of robbing the pillars; or, in other words, of taking away such portion as it was thought could be safely removed without causing the remainder to yield under the superincumbent pressure, so as to produce all the evil consequences arising from *creeps or thrusts*, which in point of fact, if carried sufficiently far, amount to a closing of the mine; and which were to a greater or lesser extent common, while the method of working under consideration continued in practice.

It is obvious that the plan of thinning the pillars was the one calculated to produce the evil sought to be avoided; for, in this case, the pressure of the superincumbent mass of strata continued to hang upon the reduced pillars; whereas, when those pillars are entirely taken away, fracture of the upper strata ensues, and the pressure is relieved. Upon this principle the late Mr. Buddle boldly and successfully stopped the progress of a creep by entirely removing a tract of pillars. The plan of pillar or broken working has for some years past been common, and all the coal of a seam which is considered worth bringing to the day is now, as a general rule, extracted. The board-and-wall method of extraction is not, however, the one adapted to produce the greatest available amount of marketable coal, and is now being superseded by other methods of working.*

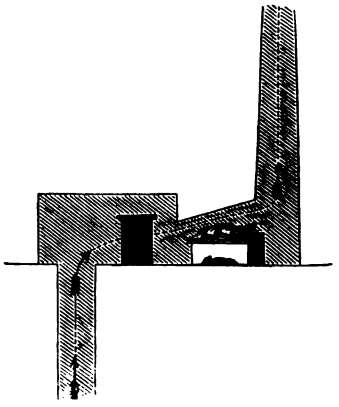
Previously to the opening of those deeper mines, in which the issue of explosive gas is so abundant, the ventilation employed was of a very simple character; so long indeed as pits were shallow, and sunk at frequent intervals, an artificial ventilating power does not seem to have been employed, or even considered necessary. In many cases a difference of level between the mouths of the pits was enough to excite a current capable of freeing the mine from its fire-damp, or from the equally noxious, though less

* The old method of thinning the pillars was reduced to a very nice calculation. "We, whose names are underwritten," sets forth a MS. Report, dated 10th Oct., 1746, and signed by five viewers, "have viewed Byker Colliery, and finde ye same to be fairly and regularly wrought, 9 yds. to ye winning, ye pillars 5 yards thick, and to ye best of our opinion there may be three quarters of a yard taken off the walls in the Hagg and Bird Pits, and one yard taken off the walls in the Chance, Speedwell, and Virgin Pits." The opinion given by them is extremely guarded, for they add, "When this is done, we cannot certify the Colliery will be upstanding."

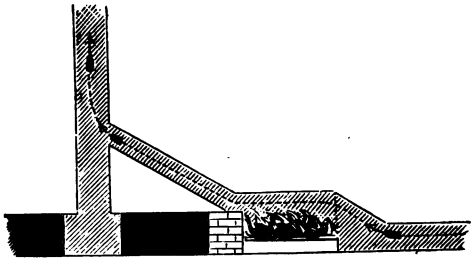
VENTILATOR TURNING WITH WIND.

BELLOWS, WITH TUBE ATTACHED.

EARLY VENTILATING FURNACE AT LIEGE.



VENTILATING FURNACE AT BANK.



UNDERGROUND FURNACE.

immediately fatal, carbonic acid gas.* In other cases, simple mechanical contrivances were resorted to, such as a ventilator turning with the wind—a fanner like that of the winnowing machine, or a pair of large bellows, with wooden trunks or tubes attached. A lamp was occasionally suspended in the return or upcast shaft. In a view of Byker Colliery, in 1740, I find the following passage:—"This colliery will be attended with difficulties occasioned by the great quantity of sulphur; but from experience we find, by using a fire lamp to rarifie and put the air in motion, hath removed almost all difficulties in that way." This quotation shows the inadequate methods of ventilation then in use. The mode of exciting a current of air here mentioned had been practised on the Continent, and particularly at Liege, for nearly three-quarters of a century. The ventilating furnace at Bank was also employed, a method of causing the return air from the mine to pass over a large fire into a chimney, or tube of considerable sectional area, and thirty to forty feet high, by means of which a rarefied column of sufficient magnitude was procured to cause at least a moderate current of air in the mine. This method is still in use at several collieries; but, where more powerful means are required, the under-ground furnace, placed near the bottom of the upcast shaft, is the common means of ventilation, having superseded the various other appliances made use of from time to time, but ultimately laid aside in its favour. At present, an attempt is being made to substitute jets of high-pressure steam for the ventilating furnace; but this method is not yet sufficiently matured to determine its merits.

The interior parts of our mines were imperfectly ventilated up to a comparatively recent period. It was

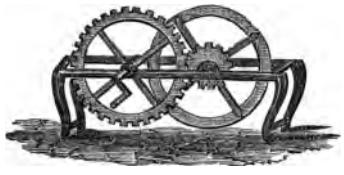
* The current, in this case, is due to the difference between the temperatures and consequent weights of two columns of air, one of which is inclosed within the mine, and the other consists partially or entirely of air in the open atmosphere. We can explain upon this principle the cause of natural ventilation being affected by the season of the year: "The old miners say," observes Hooson, "that the worst season in all the year is when the pease are in blossome; and it is certaine when the air is hot, and the weather sultry, the air does not take the ground so well as in winter time." The higher temperature of the external column, and its resulting diminution of weight or pressure, account for the difference thus experienced.

The old miners had a very primitive method of recovering a person from the effects of a noxious atmosphere. "The way that is used with those who are so far gone with it, or those who appear to be dead, is to dig up a clod in a green place, and lay them along on their bellys, with their face in the hole, where they lie not above four minutes; but remove them into fresh earth, and in three or four times soe doing some signes of life will appear, if there be any left in the bodie."—*Hooson's Miner's Dictionary.*

thought sufficient to carry an air current by the face of the workings, leaving those districts technically termed wastes, where a first working had already been made, without any ventilation; until Mr. Spedding of Whitehaven, about the year 1760, devised the plan of "coursing the air;" that is, of causing it to circulate through every passage of the several workings—thus making, in fact, an air pipe of each excavation. But we are to date the highest improvement in ventilation from the introduction, thirty-four years ago, of the method of dividing the mine into districts, each of which is supplied with its own current of air. By this arrangement the separate currents have less work to do: they have also shorter distances to travel, and an aggregate channel of greatly enlarged sectional area.

In order to give an idea of the quantity of inflammable gas which issues in some of our mines, I may here mention an example taken from Wallsend Colliery. It is seldom that an opportunity occurs of determining, with even an approximation to accuracy, the quantity of fire-damp so yielded, because it leaves the mine mixed with atmospheric air, and with other gaseous products; but in the instance alluded to, a district of about forty acres in extent, where the pillars were partially removed, had been isolated by close stoppings so as to prevent any contact with the atmospheric air, the gas produced by the barred-off space being piped to the pit's bottom, and thence to the day. From the pipe there issued for many years, as was ascertained from time to time by experiment, a quantity of gas which at the ordinary tension of the atmosphere would fill, in every twelve months, a receiver equal to the solid content of a coal-bed five feet high and 1500 acres in extent.

As the paper which I have the honour to read to this society is of an historical rather than a scientific character, it may be deemed irrelevant to go into details in the practice of mining beyond such notices as are required to illustrate the subject, I shall therefore proceed to observe, that the desideratum of lighting mines yielding fire damp, without at the same time causing explosion, induced Mr. Spedding, about the



THE STEEL MILL.

year 1760, to devise the steel mill, in which a piece of flint was held against the steeled rim of a wheel, to which a considerable velocity was given by means of a double motion, the handle being turned by a boy, who was specially employed for the purpose. In an explosive atmosphere the sparks increase in size and become more luminous, but when the inflammable gas is in excess they are of a blood-red colour. The instrument is now disused. Though it was found that explosion did occasionally take place from the sparks of the steel mill, yet in its day it enabled particular mining operations to be carried through which could not otherwise have been effected.

The next era in the lighting of mines is that of the safety lamps, of which a great variety of ingenious forms has been constructed: those most generally employed being the Davy Lamp, the Stephenson Lamp, and Clanny Lamp, the protective principle of the whole of which is that of wire gauze. George Stephenson constructed another form of lamp, the safety of which depended upon the external atmosphere communicating with the flame through small tubes, which by diminishing the length of the tubes ultimately became a disk perforated with little holes.

The common Davy Lamp, invented by Sir H. Davy in 1816, is the one most in use, though the feebleness of its light is such that four lamps are only equal in illuminating power (as shown by experiments with Croll and Glover's photometer) to one of the candles of thirty to the pound, which miners use in portions of the mine esteemed to be safe. The simplicity of its structure, and the non-introduction of any frail material, continue, however, to give it a preference. I may here remark, that the latest improvement in the safety lamp is one just now projected by Dr. Glover, and Mr. Cail of this town, who propose to have a double cylinder of glass: the air which supplies the flame passes downward between the cylinders, and by its current keeps them cool, so as to obviate one risk in the use of safety lamps with glass cylinders—that of their being, when in a heated state, suddenly cooled down by an air current, or, still more, by a drop of water—in which case fracture of the glass is very likely to ensue.*

* Amongst the shifts to which the miner was reduced, in former times, we have accounts of the use of *dried fish*; the luminousness of which furnished at least a feeble light, where the *stithe* (carbonic acid gas) prevented a lamp or candle from burning.

In 1781, Lord Dundonald took out a patent for extracting coal tar (with other products) from coal; and has consequently been considered the inventor of the process. Bailey, however, claims this merit for Mr. Dixon, whose works at Cookfield were, he says, "the first of the kind established in the kingdom for extracting tar from coals." Mr. Dixon began his operations in 1779, and continued making tar until 1783, "when he dropped the business, on account of the heavy expense of land-carriage to Sunderland, where the tar and pitch were principally used for ship-building."*

The process had, in fact, been employed by Mr. Dixon many years previously, and he had also made trials of the lighting power of coal gas; but was deterred from prosecuting them by an unlucky accident, in which his apparatus blew up.

We are thus reminded of one of the most remarkable of the many inventions connected with coal—that of gas lighting; an application experimented upon by Mr. Murdock in 1792, and carried out practically by him in the lighting of Bolton and Watt's Soho Manufactory in 1798; and again at Westminster in 1812. Winsor lighted up the Lyceum Theatre with gas in 1803 and 1804; and Le Bon had a house lighted with gas in Paris in the winter of 1802: but Mr. Murdock claims precedence over both in point of time, and in the perseverance with which he followed up his discovery.† Though doubt, discredit, and even ridicule, were at first cast upon the idea of causing a current of gas to circulate under the streets for the purpose of giving light, yet there is now consumed, in Great Britain, in this branch of the trade alone, as nearly as I can estimate, about 1,600,000 tons yearly, which is more than the gross quantity of coals raised in the entire Newcastle coal-field a century ago. In other departments the increase has also been rapid. In 1660, the vend of Newcastle and Sunderland was about 537,000 tons yearly; and, in 1700, it was 650,000 tons. In 1750, it was 1,193,467 tons; in 1800, 2,520,075; having thus quadrupled in the course of the century: and, since that period, the increase has been in a still more rapid ratio, the vend at present being upwards of

* Bailey's Durham. In reality, however, the distillation of tar from pit coal had been previously effected by Baron Von Haak and by General Conway.

† See Sir Jos. Banks' paper on the subject, read before the Royal Society, 25th February, 1808.

eight millions of tons yearly, of which something above two millions are exported to foreign countries, and $3\frac{1}{2}$ million tons are sent to London.

At the beginning of the last century only an eighth part of the present quantity found its way to the metropolis, and the entire trade has increased since that period in the proportion of nearly thirteen to one. *Coke* is not included in the foregoing statement.

The extensive establishments, by means of which the foregoing quantities of coal are produced, employ, as nearly as I can estimate from data based on actual returns, the following number of persons:—

Men and Boys employed underground . . .	29,669
Men and Boys employed aboveground, including Carpenters, Smiths, &c., &c.	7,899
Employed in shipping the coals	1,365
	38,933
To which may be added Seamen and Boys employed in the coasting trade, without including those engaged in the over-sea trade	22,500
	61,433

It is not until modern times that free labour has been employed in mines. The miners of the ancients were slaves. Even in our own country the Scottish colliers were accounted *Ascripti Glebæ* until their emancipation in the year 1775; previously to which "they belonged," says Bald, "to the estate or colliery where they were born, and from it neither they nor their children could remove: so much so, that when a colliery came to be sold, the colliers and their families formed part of the inventory of live stock, and were valued as such." This circumstance, it must be confessed, forms a curious and rather unexpected glimpse into the history of Britain during the eighteenth century, and the reign of George III.

There is a still worse stigma upon the recent mining records of our country. Though the counties of Northumberland and Durham have long been free from the national disgrace of employing female labour in coal mines, yet the practice was common in other mining districts of England and Scotland, until prohibited by act of parliament so lately as 1843. Neither was the mere fact of such

labour being employed so objectionable, perhaps, as the severe and slavish purposes to which it was applied. I really regret that my duty as a faithful chronicler, obliges me to allude to a practice which is now, fortunately, only a matter of history.*

In conclusion: since I had the honour of laying this paper before the Society, I have taken the opportunity of expanding its details somewhat beyond the limits which were then required to compress the subject within readable bounds; and I shall now close with a statement calculated to place in striking contrast the mature condition of our British coal trade, as compared with the feeble beginnings we have contemplated in its history of five centuries ago. With this view I have estimated, from the best sources of information within my reach, the present annual consumption of coal in Great Britain to be as follows :—

	Tons.
In the smelting and further conversion of metallic ores, and in lime and glass making	13,500,000
Railways and Gas	5,400,000
Domestic consumption, and all other purposes . .	24,000,000
	42,900,000
Exported to foreign countries and the colonies . .	3,500,000
Total †	46,400,000

* See Bald. "Enquiry into the condition of those women who carry coals underground in Scotland, known by the name of 'Bearers.'" Edinburgh, 1808.

See also report, Children's Employment Commission, 1842, for other applications of female labour in mines.

So early as the 16th century, the German miners "contemned and repudiated" the direct application of human labour to the carrying of mining produce to the day, on the ground of its being, in a mechanical point of view, the least advantageous method of using that power. "Veteres quicquid effossum erat *humeris* egessisse Plinius Auctor est. Verum ea ratio onerum exportandorum, quid *plures homines magnis laboribus defatigat, et multa pecunia in operas erogatur spreta à Nostris et repudiata.*" The reasons are excellent.

† Though this estimate is quite as high as any of the period, yet the more recent researches made into the subject by Robt. Hunt, Esq., of the Museum of Economic Geology, have shown that our views of the consumption were not sufficiently extended. Mr. Hunt having taken great pains in making the investigations locally upon the several coal fields of the kingdom, we must accept his results as the most accurate yet published; and it appears from them, that the yearly consumption is now upwards of 60 millions of tons. This note is, however, added four years after the reading of the paper.

APPENDIX.

No. I.

THE jealousy with which, at this period, the burgesses of Newcastle guarded their exclusive privileges, is shown in the details of a plea between them and the priors of Durham and Tynemouth respectively, anno 1290, concerning the erection, by those prelates, of towns "*where no towns ought to be*," that is, at North and South Shields. This document may be worth inserting.

"Et postea dicunt quod in itinere Johannis de Vallibus et sociorum Suorum in com Northumbr Anno Regni regis Edwardi nunc VII. present fuit per jur quod Prior de Tynemouth levavit unam Villam Super ripam aquæ de Tyne, apud Sheles, ex una parte aquæ, et Prior Dunelmi levavit aliam ex altera parte aquæ Ubi Nulla Villa debet esse nisi tantummodo Logges in quibus piscatores possent hospitari. Et quod piscatores ibi piscem Vendiderunt qui vendi deberent apud Novum Castrum, ad Magnum nocumentum totius burgi et ad detrimentum prisarum domini Regis ad Castrum Suum, quia piscis & alia Mercimonia de quibus Dominus Rex solebat habere prisas, et que ibidem Modo venduntur, deberent Vendi apud burgum de Novo Castro, Ubi Dominus Rex habet prisas suas; et quod idem Prior similiter fecit braciare apud Sheles et habuit Magnas naves piscatorum ubi non deberet habere nisi batellos tantum unde dominus Rex perdit prisas suas, et burgus Novi Castri Custumam Suam, ad grave damnum Domini Regis et burgi predicti: Et Similiter quod prior Dunelm, ex altera parte aquæ de Tyne, fecit braciare et naves habuit ubi nisi batellos habere deberet: et quod predictus prior de Tynemouth fecit furnire in furno Suo proprio panem alienum qui furniri debuit apud burgum de Novo Castro, per quod burgus perdit furnagium suum Videlicet de quolibet quarterio quatuor denarios." Rot. Parl. 1, 29.

TRANSLATION.

"And afterwards they declare that at the *visit* of John de Vallibus and his colleagues, to the county of Northumberland, in the seventh year of the reign of our now King Edward, it was presented on oath, that the prior of Tynemouth had raised a town on the bank of the water of Tyne at Sheles, on the one side of the water: and that the prior of Durham had raised another on the other side of the water, where no town ought to be, but only huts for sheltering fishermen; and that fishermen sold fish there, which ought to be sold at Newcastle, to the great injury of the whole borough, and in detriment of the tolls of our lord the king at his castle, because the fish and other merchandise on which our lord the king is wont to take toll, which are now sold in the

above manner, ought to be sold at the borough of Newcastle where our lord the king takes his tolls. And that the said prior had also made a brewery at Shields, and had large fishing craft where there ought to be only boats, whereby our lord the king lost his tolls, and the borough of Newcastle its customs, to the great loss of our lord the king and of the borough aforesaid. And also the prior of Durham on the other side of the water of Tyne, had made a brewery, and had ships where boats only ought to be; and that the aforesaid prior of Tynemouth caused other people's bread to be baked in his proper oven, which ought to have been baked at the borough of Newcastle, whereby the borough lost its furnage, amounting to 4*d.* on every quarter." Rot. Parl. 1, 29.

In 1740 there were only four ships belonging to South Shields. The trade of the place at that time consisted chiefly of salt making, in which 130 salt pans were employed.

No. II.

From Pipe Rolls, 40 Ed. III. 1367.

Particulæ compoti Henrici de Strothre Vicecomitis Northumbriæ de denariis per ipsum solutis super provisione et empcione carbonum maritimorum ad opus domini Regis emptorum virtute brevis domini Regis de privato sigillo suo eidem vicecomiti inde directi cujus datum est xix° die Februarii anno regni ejusdem domini Regis Angliæ quadragesimo.

Empcio Carbonum. } Idem computat in Dlxxvj. celdris carbonum maritimorum per majus centum emptis apud Wynlatone, precium celdræ xvij. d'., xlvij li xvij. s'. vuj. d'. Et in xxxiij. kelis et una batella cum hominibus in eisdem laborantibus videlicet in qualibet kela v. homines et in batella iiij or homines qualibet dictarum kelarum continente xx. celdras et batella prædicta continente xvj. celdras conductis pro dictis carbonibus a Wynlatone usque portum Novi Castri super Tynam cariandis et ibidem in navibus carcandis quolibet dictorum hominum capiente pro stipendio suo vj-d' et pro conductione cujuslibet dictarum kelarum et batellæ xij. d c.xviij. s'. vj. d'. Et in vadiis cujusdam Johannis Taverner existentis super cariacionem et carcacionem dictorum carbonum ac eciam super capcionem et affrettacionem diversarum navium pro dictis carbonibus imponendis et usque London ducendis videlicet a xiiij° die Aprilis anno xl° usque vj. diem Junii proximo sequentem, per liiij. dies, utroque die computato ipso capiente per diem ex convencione xij. d'. Liiij. s. Et cuidam Hugoni Haukyn pro labore et expensis suis transeundo versus London, ibidem morando pro carbonibus prædictis de magistris navium recipiendis et eosdem carbones Adæ de Hertyngdone clerico domini Regis per indenturam liberando et ad propria redeundo videlicet per lxxiiij. dies, ipso capiente per diem ex convencione xviij. d'., cxj. s'. Et diversis magistris navium

pro frettis cccccy. xx ix cheldris iij. quarteriis carbonum a portu prædicto usque London et ibidem liberatorum ut patet per indenturas de liberacione eorundem carbonum indentatas inter dictum Henricum et magistros prædictos deliberacionem prædictam testificantes videlicet pro qualibet celdra iij. s' vj. d'. ciij. li. iiij. s'

Summa expensarum clxv. li' v. s'. ij. d.'

Carbones } Idem computat de Dlxxvj. celdris carbonum maritimorum maritimi. } per majus centum emptis et provisis ad opus domini Regis virtute brevis dicti domini Regis de privato sigillo eidem vicecomiti directi ut patet supra, quæ faciunt Dclxxvj. celdras per minus centum.

Summa Dclxxvj. celdræ per minus centum.

De quibus computat in liberacione facta Adæ de Hertyngdone clerico de operacionibus Regis castri de Wyndesore virtute brevis prædicti per indenturam ipsius Adæ dictam liberacionem testificantem per mensuram aquæ Thamisiæ in London—Dlxj. celdris iij. quarteriis per minus centum [quæ faciunt per mensuram aquæ de Tyne Diiij. xx celdras per majus centum ut patet per indenturam prædictam.]* Et in avantagio dato ad summam prædictam juxta consuetudinem London scilicet ad singulas xx celdras, j. celdra, xxviij. celdras Et in perdicione tam per ejectionem Carbonum ob ingentem Tempestatem in Mari subito evenientem quam per excessum mensuræ London quoad mensuram apud novum Castrum super Tynam iiij. xx vj. celdras et quarterium per breve Regis Thesaurariis et Baronibus directum datum xxiiij^to die maii anno xlij.^do præmissa largius continentur et per sacramentum ipsius Henrici.

Summa ut supra. Et equus.†

Translation.

Particulars of the account of Henry de Strothre, Sheriff of Northumberland, of monies by him paid for the provision and purchase of sea coals, for the use of our Lord ye King, the same being purchased by virtue of the letters of our Lord the King under his privy seal, addressed to the said sheriff under date the 19th day of February, in the 40th year of the reign of our said Lord the King of England.

Purchase of coals. } The same accounteth for 576 chaldrons, counting by the long hundred of sea coals purchased at Wynlatone at 17 pence per chaldron £47 17*s.* 8*d.*: and for 33 keels and one boat with men labouring in the same, namely in each keel 5 men, and in the boat 4 men, each of the said keels containing 20 chaldrons; and the aforesaid boat containing 16 chaldrons, conveying and carrying the said coals from Wynlatone to the port of Newcastle upon Tyne, and there putting the same on board ship; each of the said men having for his wages 6 pence, and for the hire of each keel and boat 12 pence, 118*s.* 6*d.*:

* The words in crotchets, [ ], are struck out in the original.

† Freight from London to Windsor 12*d.* per chaldron, as appears from the account of Adam de Hertyngdone, 39—40 Ed. 3, of the Works at Windsor.

and for the wages of one John Taverner, superintending the loading and conveyance of the said coals, and the procuring and freighting of divers ships for taking the said coals on board, and bringing the same to London, namely, from the 14th day of April in the 40th year (of our Lord the King) to the 6th day of June next following, being 54 days, reckoning each day, he receiving 12 pence per day by agreement, 54 shillings: and to one Hugh Hankyn for his labour and expenses in travelling to London, and there abiding to receive the said coals from the masters of the ships, and delivering the said coals by indenture, to Adam De Hertyngdone, clerk of our Lord the King, and thence returning to his own home; viz., 74 days, he receiving 18 pence per day by agreement, 111 shillings: and to the divers masters of the ships for the freight of 589¾ chaldrons of coals from the aforesaid port to London, and there delivered, as appears by the indentures of delivery of the said coals, indentured between the said Henry (Strothre) and the aforesaid masters testifying of the said delivery, namely, for every chaldron 3*s.* 6*d.* £103 4*s.* 0*d.*: total sum £165 5*s.* 2*d.*

Sea coals. The same accounteth for 576 chaldrons of sea coals, reckoning by the long hundred, bought and purchased for the use of our Lord the King, by virtue of the letters of our said Lord the King, under his privy seal addressed to the said sheriff, as appeareth above, which make 676 chaldrons, reckoning by the lesser hundred.

Sum 676 chaldrons by the lesser hundred, of which an account is given in the delivery made to Adam De Hertyngdone, clerk of the works of our Lord the King of the castle of Windsor, by virtue of the aforesaid letters and by indenture of the said Adam (De Hertyngdone,) testifying the delivery of the same by measure of the river Thames in London 561¾ chaldrons by the lesser hundred, [which make by measure of the river Tyne 504 chaldrons by the long hundred, as appears by the aforesaid indenture;]* and to ingrain given on the aforesaid quantity, according to the custom of the city of London, one chaldron to every score of chaldrons, 28 chaldrons; and to loss as well by coals thrown into the sea on account of great tempest suddenly arising, as by excess of the London measure, as compared with the measure of Newcastle upon Tyne, 86 chaldrons. By the King's writ directed to the treasurer and barons, dated the 24th day of May, in the 42nd year, containing the premises more at large, and by the oath of the same Henry.

Sum as above. And it balances.

No. III.

MS. Minute, 1620.

"The state of his Majesty's Revenue upon the coals standeth thus.

"First a composition was made betweene Queene Elizabeth and the Hostmen of Newcastle for xii^{d} the chaldron to be paid unto her upon all coals going from thence and to be spent within the Kingdome; and

* The words in crotchets, [ ], are struck out in the original.

at the same time She imposed five shillings upon the chaldron upon all coals which should be transported out of the Kingdome.

"And these two, the xii^{d} and the 5^{s} she demised to farme first to Sir Beius Bulmer & upon forfeiture of his Lease for not payment of his Rent, King James demised the same to Sir Will^{m} Rider Sir John Trevor Sir Marmaduke Darell and Sir Thomas Bludder.

"But upon complaint both out of Irelande and of Wales, Gurnzey, & Jersey of the unableness of those countries to beare that imposiçon both the said Queene & King James discharged the imposiçon for coals goeinge into those parts and gave order to the Lord Threasurere to allow the farmers defaulcaçon for it.

"In the year 1620 being the xviii Year of King James upon surrendere made by the farmers of their lease and in consideraçon of a great increase of Rent the said imposiçon of 5^{s} for coals goinge into Ireland was at the suite of the farmors commanded to be renewed and by them to be received which was done for one half Yeare or thereabouts, but upon like complaint out of Ireland it was again discharged & defaulcacons allowed to the farmors.

"At the same time it pleased his Majesty the said King James to impose further upon all coals transported into forraine parts viz 3^{s} 4^{d} upon the Stranger and 20^{d} upon the English which imposiçons were not added to the farme as an augmentaçon of their Rent but being estimated at the Yearly Value of £2400 the farmors were required and in a manner inforced to purchase the same of his Mat^{ie} for the term of xxi years And to satisfie his Mat^{ie} they did in regard of his then psent use of money & paid for the same xvi ^{m}. iij^{c} & odd pounds, with condiçon that if the receipt of the said iij^{s}. iiij^{d}. and xx^{d} did not amount to the sum at which it was rated viz, £2400 by yeare but did fall short above 500$^{lb.}$ by the yeare that then the Lord Threr should allow them what loss they sustayned above 500$^{lb.}$ a year out of the rent reserved upon their farms."

No. IV.

MS. 1604.

After our hartie comendaçons. Whereas you the Mayor Stewards and brethern of ye fellowship of the Hoastman have, under your Towne Seale of yo^{r} corporation granted upon good consideration unto the late Queene deceased of worthie memorye and her successors forever, the payment of xii^{d} of each and every Chaldron of Coals as after the said Grant should be transported caryed or conveyed forth of the River of Tyne to be spent within this Realme The which sum yo^{u} the Governor Stewards and Brethern of the Hoastmen should by your covenant so to be truly answered and payede to his Majesties farmer Sir Thomas Bludder Knight who is authorised to receive the same. Notwithstanding as we are informed you the Governor and Stewards doe soe neglect yo^{r} authority granted by Charter for the better government of your

company And the particular Hoastmen throughing your neglect and sufferance compacting with the Masters to load them by the Bulk, and not by any just and true measured Keele after the measured Chaldron necessarily to be used. And also in suffering your Keelman and others who are not of your company and fellowship of Hoastmen to convey coals which have been purloyned from yourselves aboard on Ships downe into the River, as well by night as by day not only of the defrauding of his Ma^ties^ said farmers but also in time to come to the hindrance of his Ma^ties^ inheritance in this behalfe if present redresse be not had therein. Theis are therefore to will and require you as you tend his Ma^ties^ service and as you will answer at your perill that you call to court according to your authority And enjoyne and compell reformation of the said abuses And to take such present order as the said farmers deputies shall have no further cause to complain of this and such yo^r^ indirect proceedings which usually have been and are committed among you as appeareth by many short entryes of ships this summer.

Court of Whitehall 12th Nov^r^ 1604.

No. V.

At a Court holden the 20th day of May An^o^ Dm 1622.

Forasmuch as since the late grant made by the fellowship of Hoastmen unto our late Sovereign Lady of famous Memory Queene Elizabeth for the payment of 12^d^ for every Chaldron of Coals to be vented and carried out of the River of Tyne to be spent within this Realme of England divers great abuses have arisen and grown by the secrett and disorderly loadeinge of the said Coals to the great prejudice of his Mat^ties^ Revenues and the farmers of the said 12^d^ and of the Imposiçon of such Coals as are transported beyented the seas as namely in the Covert lading of great quantities of Coals and false and shorte enteries of the same and by the ladinge of divers ships by the Bulke and in gross and not by the due measure of keeles and lighters whereby the due and just measure of the same might the more certainly appear of which and of divers other great abuses complaynte hath been made by the farmers and collectors of the aforesaid twelvepence and impositions both to his Majesty and to the Right Honorable the Lords of his Majesties most Honorable Privy Council of which abuses it hath pleased his most excellent Majesty and the Lords of His Most Hon^ble^ Privy Council to take notice and by their letters at several times to enjoine and command the said fellowshipp to call their courts, and according to their authority to enjoyne and compel reformation of the said abuses that the said collectors and farmers should have no further cause to complain of such indirect proceedings in which their Lordships letters they have declared that the said fellowship stands answerable to his Majesty for the payment of the twelvepence of every chaldron of coals so vented as aforesaid by whomsoever the said coals were sold and delivered, which might in

tyme tend to the great damage and prejudice of the said fellowshipp whereupon we the said fellowshipp have heretofore according unto our duties and the tenor of the aforesaid letters by divers ways and means attempted and endeavoured to perform his Ma^ties^ and their Lordships commands which having not taken that good effect we expected and desired and being now again by process forth of exchequer Chamber retornable in Easter Term next against the Governor stewards and some of the fellowshipp for the defaults before mentioned, summoned to answere have thought fit to refer the management of the Vent of coals to certain choyce and principal men of the company who we assure ourselves will be careful both of his Maj^ties^ benefit and their own Creditts in the faithful disposing of the business committed into them And to that end the Governor Stewards and fellowshipp of Hoastmen have ordered in manner and form following Viz^t^.

Imprimis. We do order that Sir Peter Riddell Mr. Thomas Tempest Mr. Tho^s^. Liddell Mr. Robert Shaftoe Mr. Alex^n^. Davidson, Mr. W^m^. Bonner and Mr. Robert Anderson shall loade and lay aboard by such servants as shall be by them appointed any coals belonging to any brother of this fellowship and shall contract with the Master of shipps for the same at such prices as they can agree and shall think the coales shall be worth and the money which shall be received for the same at the end of every week shall be delivered to the owner the necessary charge being first deducted.

Item. It is ordered that they shall see all mens coals loaden with indifferency that is to say in due proportion for times and numbers as conveniently as may be done according to the numbers hereafter set down.

Item. That they have a Special regard to their servants and Book keepers that the entries made for all such coals as shall be by them laden aboard of any ship or other Vessell within the River Tyne either to be spent within the Realme or else transported beyond the seas.

Item. That the Book keepers give their continual attendance in the Hoastmen House for the speedy dispatching of Ships.

Item. That all the Hoastmen under named make sufficient provision of keeles according to the proportion of his number and shall keep them at all times in readiness and good repair And to the end there be no default in any of the said keeles for want of measure to the prejudice of the buyer And that all such keeles as have not been already measured this year shall be forthwith duly measured according to the statute in that case provided.

Item. To the end that this may the better continue if all men be equally and alike delt withall, it is likewise ordered that Sir Peter Riddell Mr. Thomas Tempest Mr. Thomas Liddell Mr. Robert Shaftoe Mr. Alexander Davison Mr. William Bonner and Mr. Robert Anderson shall weekly see the accompt of their Book keepers and give to every one his due proportion of money which shall be due for his coals sould, laden and vented that week And at the end of every two Months at the least every man shall be made even in his delivery of coales according to his proportion unless the fault do appear to be in himself.

Item. That they do not sell any mans coales for this present year at any greater price than the same hath been sold for heretofore.

Item. That they go to Pits and Steaths as often as conveniently they can and there take order that all sorts of coals shall be clean wrought and Wayled and made Merchantable.

The number of coals which every brother of the fellowshipp hath to Vent this year as follows:—

1622.	Tens.
Sir George Selby	750
Sir Thomas Riddell	900
Sir Peter Riddle	300
Sir Fra. Brandlyn	500
Sir Nichs. Tempest	600
Mr. Thos. Tempest	900
Mr. Henry Lidall	700
Mr. Thos. Lidall	800
Mr. Fra. Burrell	150
Mr. Henry Madison	700
Mr. Robt. Shaftoe	550
Mr. Alex. Davison	450
Mrs. Mary Hall	450
Mr. Robt. Hodgson	600
Mr. Henry Chapman	700
	9050

	Tens.
Mrs. Barbara Riddell	450
Mr. Robt. Anderson	350
Mr. Wm. Bonner	600
Mr. Robt. Bewick	500
Mr. Nichs. Blaxton	550
Mrs. Barbara Milburne	60
Mr. Robt. Gray	500
Mr. Jos. Clavering	400
Mr. Lyonell Madison	300
Mr. Ra. Madison	300
Mr. Henry Anderson	125
Mr. Thos. Crome	400
Mr. Thomas Hall	120
Mr. Henry Eden	350
Mr. Wm. Sherwood	225
Mr. Chas. Tempest	140
	5370
The total of the Tens is	14,420

The order to take beginning from the present 20th April and to continue until the fifth of January next And these persons hereunder mentioned in this first division are content that Mr. Robert Anderson and his servants shall load all their coals.

And those persons hereunder named in the second division are contented Mr. Alexr. Davidson by himself and his servants shall lade all their coals.

And these persons hereunder named in the third division are contented Sir Peter Riddle Knight and his servants shall load all their coals.

And these persons hereunder named in the fourth division are contented Mr. Thos. Liddle and his servants shall load all their coals.

And these persons hereunder named in the fifth division are contented that Mr. Robt. Shaftoe and his servants shall lade all their coals.

And these persons hereunder named in the sixth division are contented that Mr. Thos. Tempest and his servants shall loade all their coales.

And these persons hereunder named in the seventh division are contented that Mr. Wm. Bonner shall lade all their coals.

Sir George Selby	750	2000	
Sir Nichs. Tempest	600		
Mr. Robert Anderson	350		
Sir Fran. Brandlyn	300		
Mr. Wm. Hall	450	1980	
Mr. Alex. Davison	450		
Lyonel Madison	300		
Mr. Robt. Hodgson	600		
Thos. Hall	120		
Mrs. Milborne	60		
Sir Thos. Riddall	900	2000	
Sir Peter Riddall	300		
Mrs. Riddle	450		
Henry Eden	350		
Mr. Thos. Liddell	800	2175	Tens. 14420
Mr. Blaxton	550		
Wm. Sherwood	225		
Thos. Crome	400		
Frans. Brandlyn	200		
Mr. Clavering	400	2065	
Mr. Burrell	150		
Mr. Shaftoe	550		
Mr. Chapman	700		
Henry Anderson	125		
Chas. Tempest	140		
Mr. Thos. Tempest	900	1900	
Mr. Henry Madison	700		
Ralph Madison	300		
Mr. Henry Liddle	700	2300	
Mr. Bewicke	500		
Mr. Cuth. Gray	500		
Mr. Bonner	600		

Subscribed by

Wm. Jenison, Coalowner.
George Selby.
Thomas Riddle.
Peter Riddle.
Francis Brandlyn.
Thos. Tempest.
Fras. Burrle.
Robt. Bewick.
Robt. Anderson.
Henry Liddell.
Henry Madison.
Robt. Shaftoe.
Thos. Liddle.
Willm. Hall.
Henry Chapman.
Wm. Bonner.
John Clavering.
Nich. Blaxton.
Wm. Sherwood.
Cuth. Gray.
Thos. Crome.
Henry Eden.
Henry Anderson.

The tendency to over-production in the coal trade has been felt in all its epochs, and is as much the character of the trade at the present day as it was in the reign of James I. The reason is not of difficult discovery. Coal resembles a stock of material laid up in store, and always ready for use without any previous preparation, except that of merely severing and carrying it away. In this respect it differs essentially from those articles of commerce which require to be perfected by much labour, or which, being the growth of a twelve months' culture, are precluded from increasing too fast on the hands of the owner; and this inherent difference is the true cause of the necessity which has been, and will be, felt, for an artificial adjustment of supply and demand in the coal trade. As a sequel to the foregoing document, I may insert another, which shows that the neglect of this principle, (though it had been well understood a century earlier,) obliged the coal owners of 1665 to stop their works for five months, after accumulating very large and useless stocks at the pits and staiths.

On the 27th April, 1665, a meeting of the Representatives of Tyne Collieries was held at Newcastle, at which the following resolution was passed:—

"Newcastle, April 27th, 1665.

"At a meeting of several of the principal traders in coals at the said town, upon a serious debate and consideration, that there is a great quantity of coals now wrought and lying at Pits and Staiths, which, if it should please God, trade should be open and free in a short time, cannot be vended in the ensuing summer, and that if more coals be wrought, it will not only bring such necessity upon the owners of the mines, as that they will not have money to keep on their water-charge, and other necessary charges for preserving the collieries from being utterly ruined, and rendered useless to themselves and the people in general; but the coals that are, and may be wrought, will become unfit for fuel. They have, for the causes aforesaid, unanimously agreed and concluded, that from the first day of May next, no coals shall be wrought at all, on any of the collieries at the river Tyne, for ship coals, until the coals now at the Pits and Staiths that are merchantable be so near vended that the trade may be supplied with fresh and merchantable coals."

"I am content that my colliery, wherein I am concerned, shall lye until the 29th day of September next.—Fran Liddell."

"For want of money, I cannot carry on work, and therefore, I am content to let mine stand till the 29th of September.—Jas. Clavering."

"I am resolved and do promise you, that my colliery shall not work, for some reason to myself best known, till the 29th of September next, 1665.—Fras. Anderson."

"I do promise to work no coals till the 25th of September next.—Willm. Riddell."

"Having at this present more coals than, in all probability, I can possibly vend this eighteen months, am therefore resolved to lay in my colliery for five months ensuing.—Wm. Blackett."

"Having a great proportion of coals at Pits and Staiths for present vend, and more than, in all probability I can vend for ten months, I engage not to work more until 29th September next, 1665.—Robt. Ellison."

"I promise to work no more coals till the 25th of September next.—J. Watson."

"I do promise to work no ship coals until 2nd of September next.—Jer. Colhirst."

"I do promise to work no coals until 25th of September, 1665.—Robt. Carr."

"I do promise to work no ship coals until the 29th of September next.—Cutht. Dikes."

"For my father, and by his order, we will work no coals, nor pay any for want of money, until the 29th September, or the major part of the owners wherein we are concerned work.—Ra. Gray Junr. for his father."

"For want of money I promise to work no coals till the 29th September next.—Henry Maddison."

"I am content, my colliery shall not work till the 29th September, 1665.—Ra. Carr."

"For my partner and self, we will work no coals nor pay any, for want of money, until the first of September, 1665, or the major part of the owners, wherein we are concerned work, provided all lay in their workings.—Ra. Johnson."

"I am willing the colliery to lye until the 29th September 1665.—Witness my hand, Henry Marley."

"I am content the colliery to lye in until the 29th Septr. next, 1665.—Peter Maddison."

"For want of money I cannot work any coals until the 29th of September next, 1665.—John Fletcher."

"I am willing that the colliery wherein I am concerned shall lye in until the 29th September, 1665.—Thos. Harrison."

"For want of money I cannot work any coals until the 29th of September next, 1665.—Thos. Belley."

"For want of money I am disabled to carry on the works, and is content, for my part, to lye until the 29th of September 1665.—Geo. Beadnell."

"I do promise to cause no ship coals to be wrought until the 1st of September, unless commanded from my master, Sir Thos. Liddell."—Ja. Baird."

"I do promise to work no more coals until the 29th of September next, 1665.—John Rogers."

"I am content to desist working any coals for my proportionable part of the colliery, until the 23rd of September next, witness my hand, John Varey."

No. VI.

MS. 1609.

The Abstract for this whole Years account for ye composiçon of xii*d.* and the Imposiçon of 5*s.* collected from the 21st Decr. 1608 unto ye 21st December 1609.

		£	*s.*	*d.*
Newcastle .	Collected for the composiçon of xij*d.* the chaldron from 21st December 1608 unto Midsommer 1609 . .	2474	12	0
Synd Land.	Collected for the like composiçon of xij*d.* during the same tyme	93	11	0
Blyth . .	Collected for the like composiçon of xij*d.* the chaldron during the same tyme	1	4	0
		£2569	7	0

Newcastle .	Collected for the Imposiçon of 5*s.* the chaldron during the tyme aforesayde	1602	0 0
Synd Land.	Collected for the like Imposiçon of 5*s.* the chaldron during the same tyme	142	10 0
Blyth . .	Collected for the like Imposiçon of 5*s.* the chaldron during the same tyme		
		£1744	10 0

Sum total as aforesayde is . . £4313 17 0

Newcastle .	Collected for the Composiçon of xij*d.* from Midsummer 1609 unto 21 December 1609 . . .	2627	18 0
Synd Land.	Collected for the like Composiçon of xij*d.* the chaldron during the same time	127	1 0
Blyth . .	Collected for the like Composiçon of xij*d.* the chaldron during the same time	19	3 0
		£2774	2 0

Newcastle .	Collected for the Imposiçon of 5*s.* the chaldron for the same tyme	1369	0 0
Synd Land.	Collected for the like Imposiçon of 5*s.* the chaldron during same tyme	141	5 0
Blyth . .	Collected for like Imposiçon of 5*s.* the chaldron for the same tyme	0	0 0
		£1510	5 0

Suma totall: during this last half year. £4284 7 0

Item .	Received for Port entries at Newcastle . .	3	16 0
	Received for Port entries at S° Shields . .	3	7 0
	Received for Coals Shipped to Berwick Anno 1608 .	1	0 0
	Received of John Colburn from James Presman upon his bond sent into the Exchequer by your letter to us directed therefore dated 27th August 1609 . .	6	0 0
		£14	3 0

The whole som collected during this said year as aforesayde . £8611 7 0

Item .	Remaining upon the last year's accompt in debts .	91	18 4
	Remaining likewise in the Safe . . .	23	13 4
		£115	11 8

The whole sum wherewith we stand charged for the present year as aforesayde is . . . £8727 18 8

In Discharge as follows:

	£	*s.*	*d.*
Paid unto Clothiers by Warr[t] this Year . .	3070	0	0
Paid unto Mas[rs] of Shipping and others by Warrant .	3693	15	10
Sent to London by Treasurer this Year . .	1490	0	0
Paid out for fees, Wages and other Charges as appeareth particularly in the general accompt . . .	293	18	8
Owing in debts to this accompt as appeareth . .	94	12	4
Remaining in the Safe to balance this Accompt .	85	11	10
	£8727	18	8

(Signed) Francis Belgrave,
Ar. Ridley,
Ric. Baker.

MS. 1622.

No. VII.

The abstract of our accompts for the Composiçon and Imposiçon upon Sea Coles for Newcastle and the Memberes for one whole Yeare endynge at Christides. 1622.

		£	s.	d.
Newcastle .	Collected for the composiçon of xii*d.* the chaldron for Christmas 1621 and Midsomer 1622 . .	3294	4	0
Newcastle .	Collected for the Imposiçon of 5*s.* the chaldron . . .	2433	10	0
Sunderland.	Collected for the Imposiçon of 5*s.* the chaldron . . .	78	0	0
Newcastle .	Collected for the Imposiçon of 3*s.* 4*d.* the chaldron . .	1301	10	0
	Collected for the Imposiçon of 20*d.* the chaldron	160	10	0
Sunderland.	Collected for the Imposiçon of 3*s.* 4*d.* the chaldron . .	47	3	4
	Collected for the Imposiçon of 20*d.* the chaldron . . .	2	8	4
Sum tottal £7317 5*s.* 8*d.*		£4023	1	8

In discharge as follows.

	£	s.	d.
Paid by warrt. as by the accompt appeareth . . .	10998	14	7
Sent to London by Shipping . . .	2900	0	0
Lent to Mas^rs. of Shipping cash upon their Bills to be by them repayed at London .	382	0	0
P. out for allowances of wages and other charges as by the accompt pticularly appeareth . . .	340	0	5
Occurring in debts to this accompt . .	110	13	4
Remayning the Safe to balance this account which is now brought up to London . . .	1295	6	6
	£16026	14	10

Post Festum Johis Bapt. 1622.

		£	s.	d.
Newcastle .	Collected for the Composiçon of xii*d.* the chaldron from Midsomr. 1622 unto Christide 1622 .	3891	3	0
Newcastle .	Collected for the Imposiçon of 5*s.* the chaldron	2775	10	0
Sunderland.	Collected for the Imposiçon of 5*s.* the chaldron	118	0	0
Stockton .	Collected for the Imposiçon of 5*s.* the chaldron	2	10	0
Newcastle .	Collected for the Imposiçon of 3*s.* 4*d.* the chaldron . .	1408	3	4
	Collected for the Imposiçon of 20*d.* the chaldron	221	6	8
Sunderland.	Collected for the Imposiçon of 3*s.* 4*d.* the chaldron . .	67	6	8
	Collected for the Imposiçon of 20*d.* the chaldron	5	13	4
Stockton .	Collected for the Imposiçon of 3*s.* 4*d.* the chaldron . .	1	13	4
Sum: tottal: £8496 6*s.* 4*d.*		£4600	3	4
Remaining in table the last year		116	18	4
Ditto in the Safe last year . .		111	14	6
		£228	12	10

(Signed)

RICHD. BAKER,
CHAS. KYLLGOUR.

The total charge of this year's accompt as abovesayed . . £16026 14 10

No. VIII.

MS. 1617.

Ultimo die Decembris 1617.

The accompt of all such sommes of money as have byn raised at Newcastle Sunderland and Blyth, and all the several ports ensewyinge within the compasse of one whole Yeare begon 22 December 1616 and ended the 21st December 1617 Viz.:

The whole charge of this year. M. C. lb. s. d. xi. v. xl. xii. vij.

	M.	C.	lb.	s.	d.	£
By money receaved	viii.	ix.	lxix.	iii.		9119 15 9
By debts and money in the Safe there the last Yeare	lb. cl.	s. xij.	d. ix.			
A debt of				s. xx.		
London	lb. xviii.	s. vi.	d. viii.			
Swansey	xx. c.c.	lb. iiij.	iiij.			
Bristoll	lb. cviii.	s. xv.				127
Barnestable	lb. xviij.	s. v.				
Lynne	s. lxvi.	d. viii.				
Alborough	s. xxv.					
Defalcacons.	C. M.	xx. ix.	lb. iiij.	v.		s. xviij. d. vi.

	M.	lb.	s.
The whole year's rent paid into the excheqr.	vi.	ccc.	
Fees about the payment thereof	lb. v.	s. vi.	
Mr. Bingley and his Clerk			s. lx.
The Quietus est			lvi. vi.
The payment of rent before hand	lb. ccxx.		
The Lord Mayor of the City of London	lb. cc.		
For Sundry Charge as hath appeared unto us	lb. clxvi.	s. xvii.	d. x.
To Joseph Winge for fee—much given him in rewards chas. 1625 not allowed the last yeare	lb. v.		
To Charles Kyllgour for his charge this year coming up with the accompt	lb. v.		
For fee muche disbursed by the deputies att Newcastle for fees, wages, &c.	lb. ccciiij.	s. xiiij.	d. vii.
	M. vii.	lb. ccxii.	s. xiiij. xi.

Summa hujus paginæ . . . M. vii. lb. ccxii. s. xiiij. x.

		lb.	s.	d.
Deputy at London.	To Richard Starre for his fee this year . .	vi.	xiij.	4
	To Griffin Lynton for his fee	lb. iiii.		
	To the Coal Meatrs. for their Book . . .	lb. vi.	s. xiii.	4
Deputy on the North Coast.	To Danyell Moore for his wages	lb. xl.		
	To him more for lawe causes and travelling charge as appeareth by his Bill	lb. xxxv.	s. xi.	d. iiij.
Deputy on the West Coast.	To Joseph Winge for his wages travelling charge and deputies fees as appeareth by his accompt .	lb. xxx.	s. x.	d. viij.
Deputy at Chester and Liverpool.	To William Singleton and Clim Fairhurst for certifying the transportation of 1879 ch. ½ of coals fro that porte at viij*d.* ye chaldron . . .	lb. lxij.	s. xiii.	
Deputy in Cumberland.	To Thomas Skelton for keeping entrie and certifying the transportation of 1155 ch: of coals from that port at vi*d.* the chaldron	lb. xxviij.	s. xvii.	d. vi.
Deputy at Swansey.	To Henry Flemminge for keeping notice and certifying the transportation of 1245 ch: at viii*d.* the ch: xli*lb.* x*s.* and iiij other chal: omitted in his accompt the last year and now charged in this accompt, ii*s.* viii*d.*	lb. xli.	s. xij.	d. viii.
Deputy at Milford.	To Lewis Rowell for keeping notice and certifying the transportation of 747½ ch: of coals from that porte at viij*d.* per chaldron	lb. xxiiij.	s. xviij.	d. iiij.
Deputy at Aldborough.	To Richd. Poty for certifyinge 5 chal: transported from that port at vi*d.* the chaldron . . .		s. ii.	d. vi.
Deputy at Lynne.	To Wm. Leach for his yearly fee xl*s.* and for keeping notice and certifying 26 chaldrons transpd. into france viii*s.* in all		s. xlviij.	
	To Henry Bludder for his pains taken in this business		s. c.	
	To Thos. Bowlett for writinge and making entry of all the proceedings of the farm . . .		c.	
	To the Accomptant for his pains and trouble therein	lb. xx.		
	Summa hujus paginæ . . .	lb. ccc.xiiij.	o.	viij.

Suma totalis of the disbursments	M. vii.	C. v.	lb. xxvj.	s. xv.	d. vii.	
Which being deducted out of the charge there will remayne .	M. iiij.	lb. xiii.	s. xvii.			
In the Safe at Newcastle	lb. ccxvi.	s. 2.	d. vi.	257	s. 4	d. 6
In debt there	lb. xlj.	s. ij.				
Pr John Klinch and not paid with his discount .	lb. x.					
Owing by Thos. Cowards Master of the Tryall for which he gave bonde att Newcastle to repay here	lb. lx.			70	0	0
Suma				£327	4	6
And then will rest in hand	£3686	12	6			
Which divided into 4 parts will be to each .	£921	13	1½			

No. IX.

M.S.S. 1638. Agreement between the King of the first part, the Governor, Stewards, and Brethren of the Hoastmen of the second part, and the Coal owners of the third part.

The first four clauses recite amongst other particulars the names of the parties; the Coal owners being enumerated as follows:—

Thos. Lyddell.
Sir Thos. Tempest.
Sir Thos. Riddell, Knt.
Sir Wm. Selby, Knt.
Sir Peter Riddell, Knt.
Sir Rich. Tempest, Knt.
Sir Robt. Hodgson, Knt.
Sir J. Middleton, Knt.
Sir Lionel Maddison, Knt.
Alex. Dobinson.
Robt. Bewick.
John Clavering.
Henry Lyddell.
Sir Robt. Shaftoe.
P. Cole.
Leo Carr.
Ra. Maddison.
Toby Dudley.
Lanc. Errington.
Michl. Baxton.
Peter Maddison.
Fra. Lyddell.
Thos. Lyddell.
Frances Cole.
Robert Anderson.
Ralph Anderson.
Ralph Cole.
John Morley.
Thos. Crome.
Rich. Hodgson.
F. Fowler.
Henry Heyden.
Edw. Pearson.

The fifth clause covenants that for 21 years from 16 January ultimo, his Majesty shall have, and they the Hoastmen and owners respectively grant to his Majesty his heirs and successors

6. All good and Merchantable Coals laden aboard any ship or other Vessel within the River Tyne.

7. The same not to be Vented or sold to any but only to his Majesty or to some other of the fraternity who shall sell the same to his Majesty.

8. The King covenants to sell the Coals and to pay the Hoastmen and owners for the same.

9 to 12. Hoastmen and Coal owners to provide Keels and to pay all duties to the King in the Town of Newcastle.

13 and 14. Coals sold aboard ships of his Majesties Subjects for home or foreign Vent to be xi^{s} per chaldron, and xii^{s} for every chaldron laden aboard the Ships of Aliens for foreign Vent such prices to be paid weekly to the Coal owners and that those prices were the same that for many years past coals had been sold for.

15 to 20. Provide for an advance of price at the end of any 7 years of the Term provided just cause is shewn "in respect of the greate charges of wynnying and workinge the saide coles."

23 and 24. The King covenants that the price shall be xi^{s} and xii^{s} as above mentioned.

25 and 26. The 6 factors shall deduct 2^{d} out of every chaldron out of the Coal owners price, the same to be a Stock, and to be kept in the

hands of three of the Hoastmen to be chosen by the xi, out of which stock shall be paid the charge of finishing this contract and expenses of those that attend and travel about: the surplus to be disposed of every year by the direction of the xi, for the reward of the factors and others that take pains in these premises.

27, 28, 29, 30, and 31. Constitution of the Governing Body.

The Hoastmen shall assemble at their Meeting House and chose xi persons out of the "fittest" Hoastmen to continue in office five years.

The 6 factors to be nominated by the said xi. The said 6 factors to be chosen out of the Hoastmen.

32, 33. The factors to Vend each owner's Coals in a due proportion.

34, 35, and 36. The xi once every year before the 16th January shall consider what Coals Coalworks or Coalmines are fit to be wrought for the year next ensuing, and without partiality what number of Tens every Colliery and Hoastmen shall furnish towards making up the whole quantity of Coals to be Vented that year. If any Hoastmen's Vent shall be more or less than was allotted to him in any Week the factors are to equal their proportions again the next week or time of shipping. If a Mine in any year shall not be able to provide the quantity for which it was rated then the owners so failing shall abate that want out of their respective rates and the same shall be supplied by the rest of the fraternity.

37. No persons to be permitted to Vent Coals to be shipped but such as are freemen of the said fraternity and the Coals his own; nor shall Vent the same in any other manner than according to these presents.

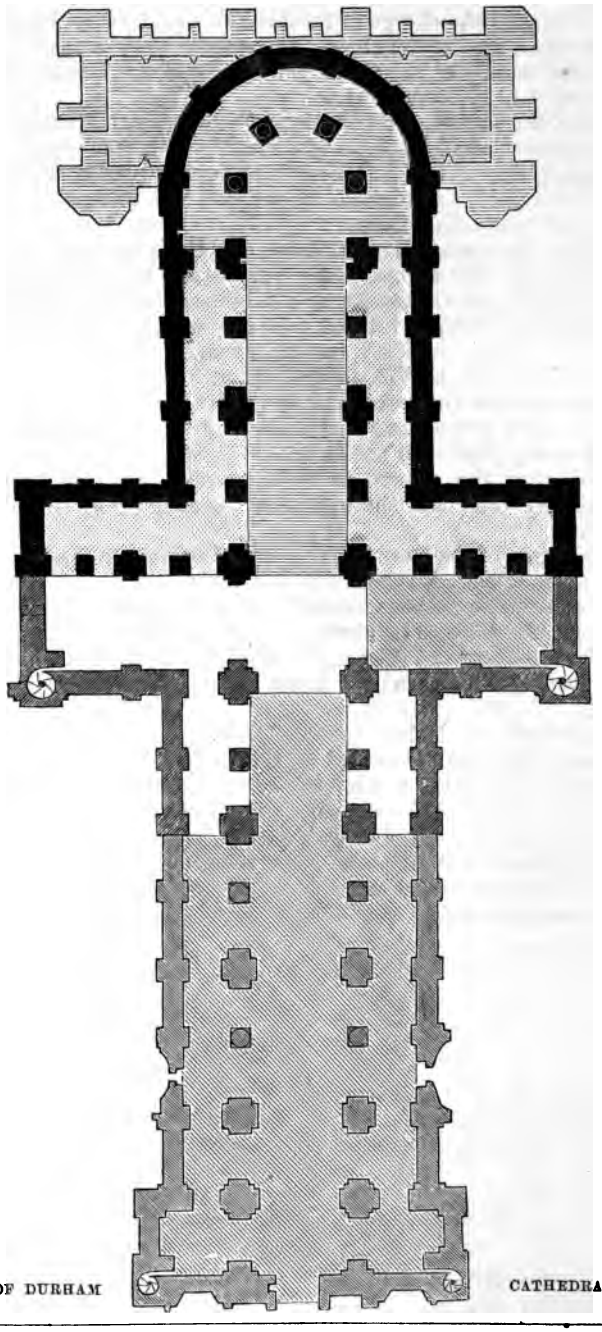
38 and 39. No Ship to be cleared in the "Customs House or Towne House," but upon the certificate of one of the factors or his depty.

40. Persons Venting in any other manner than prescribed to be punished.

41. Coals to be good Merchantable Coals.

42. If any refuse to be ordered by the factors then the factors shall give notice thereof to the xi who may convene those parties before them and hear and determine the same, as also all other differences that may arise to the hindrance of the Coal Trade.

43 to 46. Masters of Ships to have their due measure, and for this purpose all Keels to be measured and made equal measure by commissioners to be appointed.



PLAN OF DURHAM CATHEDRAL.

ON THE ARCHITECTURAL HISTORY OF THE CATHEDRAL CHURCH OF DURHAM.

By the REV. JAMES RAINE, M.A.,

AUTHOR OF THE "HISTORY AND ANTIQUITIES OF NORTH DURHAM," &c.,
AND LIBRARIAN OF DURHAM CATHEDRAL.

I HAVE been requested to place before the Members of the Archæological Institute here assembled a few notices touching the history, in an architectural point of view, of the Cathedral Church of Durham; and with that request I willingly, but with much diffidence, comply. In the absence of Professor Willis, who on former occasions has so minutely and satisfactorily performed a similar task in the different cathedral cities in which the Institute has from year to year assembled, I must endeavour to supply his place to the best of my power. I am fearful, however, that before I shall have made much progress in my undertaking, the members of the Institute whom I have the honour of addressing will have come to the conclusion that I am but a poor substitute for that gentleman. But, at all events, whatever may be my failure, I cannot refrain from expressing a hope that in thus stepping forward, *at the very eleventh hour*, to perform a task, which I have by no means courted, and which more properly belongs to a regular architect, or at all events to one who has devoted more time to architectural pursuits and studies than I have done, I may disarm of their criticism the professional gentlemen at least whom I have the pleasure to see around me. If they have compelled me to undertake their duty, I presume to expect their forgiveness for any mistakes I may make, or any misapplication of architectural terms of which I fear I shall be guilty.

I deem it advisable to state, *in limine*, that it is my intention to deal with the cathedral merely in its great prominent features. To dilate upon this particular form of arch, or that particular window or moulding or decoration, forms no part of my plan. After I shall have finished these my general remarks, and you shall have been furnished with what, according to the best of my judgment, I consider to be the great leading periods and dates of the fabric in its various parts, an opportunity will be afforded to each of you to examine the structure itself at leisure and in detail, and I shall have much pleasure in rendering upon the spot any further information in my power upon a subject of such striking and venerable interest.

There are other topics also to which I do not consider it necessary to call your attention. The first is the internal fitting-up of the church for Divine worship before the Reformation, including the arrangement and dedication of its various altars, together with a detail of its numerous observances and ceremonials. These subjects, many of them of the highest interest, of which any account, however brief, would of necessity occupy much time, I have the less hesitation in passing over as they are all so fully set forth in that most unique and valuable record, which has lately been faithfully republished with numerous additions and collations of manuscripts by the Surtees Society, entitled "A Description, or Brief Declaration, of the Ancient Monuments, Rites, and Customs within the Cathedral Church of Durham before the Suppression." It is more than probable that this book was written by one who had been an eye-witness of the devotional solemnities and gorgeous processions which he describes; and we are not without a feeling of pride in the circumstance that Durham is the only cathedral which can boast of such a minute and faithful record of its ante-reformation arrangements and ceremonials. Another subject, to which I am not inclined to call your attention, is the various innovations which have been made in the cathedral, under the name of improvements, since the commencement of the present century. The deeds are done, and I leave the subject to posterity, premising that there are in existence faithful delineations of the fabric in its various parts before the hand of alteration was raised against it.

I would further state, before I proceed, that in the following pages I have made very much use of some most valuable hints kindly communicated to me many years ago by a friend* intimately acquainted with the subject, and with his kind permission have not hesitated to adopt his very words when they suited my purpose. What I have borrowed from him is, at least, to the point, and for those parts of my statement I feel no anxiety.

The see of Durham was originally founded and established at Lindisfarne (now Holy Island), in the year of our Lord 635. Cuthbert, the sixth of its bishops, upon his death in 687, became the patron saint of the church and diocese, and, upon the destruction of his cathedral by the Danes in the year 875, his remains were removed from the island, in conformity with his dying injunction, and were carried about from place to place by a few of his devoted ecclesiastics, until having sojourned for a longer or shorter period at Craike, Chester-le-Street, and Ripon, a final settlement was made at Durham. It forms no part of my plan to detail the wanderings of the monks of Lindisfarne from place to place with the precious body of their sainted bishop, or to enter into the circumstances which are alleged to have led to their final resolution to settle upon the hill of Dunholme. I would only observe, that when the remarkable character and situation of this our hill are taken into consideration, it would have been surprising indeed to have found in after days a place so favourably circumstanced, so surrounded by natural beauties, and so calculated for defence and security in times of need, not occupied by some monument of ancient fortification or devotion. The hill of Durham has for now nearly nine centuries boasted of both, "Half church of God, half castle 'gainst the Scot," "founded in the bosom of woods and hills and waters."

Aldhune was at that time bishop of the, previously for a long period, wandering see of Lindisfarne. But we now hear no more of that ancient name as the seat of episcopacy. A cathedral church, such as it was—but of whatever it was, no trace or description remains—was speedily erected upon the hill of Durham. This church was consecrated, with much magnificence and solemnity, in the year 999;

* George Edward Laing, Esq., architect.

but, after standing for about ninety years only, it was levelled with the ground to make way for the stately fabric to which I have undertaken to call your attention. When this event took place William the Conqueror was upon the throne of England, and a Norman ecclesiastic, William de Sancto Carilepho, was the Bishop of Durham; a prelate whose very portrait I shall this morning have an opportunity of exhibiting to you as it stands in a painting contained in one of the choicest and most beautiful of our manuscripts, presented by the bishop to his infant cathedral.*

With the reasons which led to the removal of Bishop Aldhune's cathedral I am unacquainted. Whether the cause is to be looked for in the introduction of a new order of ecclesiastics into the convent—the regular instead of the secular;—or whether, from its size or other circumstances, it had become unsuitable to the increased wealth of the church of Durham, it would now be in vain to inquire. On these points the historians of the church afford us no information. The old church, however, was removed, and the foundations of the church which is now before us were laid in 1093 or 1094. The bearing of this date in mind may be useful hereafter. We have it upon record that the bishop himself undertook to construct the church, the monks making themselves answerable for the erection of such conventual buildings as might be required.

With respect to the original plan of the church we are not left in doubt. It was in the form of what is generally denominated a Latin cross, and, like the greater part of our early Norman churches, it consisted of a nave and two

* AUGUSTINUS SUPER PSALTERIUM, B. ii. 13. The following description of this interesting specimen of ancient art is extracted from my "*Auckland Castle*," pp. 8, 9. The portrait is contained in an initial I. in the manuscript, and represents the bishop arrayed in his episcopal robes as they were worn in his day. The background is red. Over the alb is a chasuble of green. The stole—no maniple is visible—is red and white, the termination green. In his left hand he holds a long red pastoral staff, and his right hand is elevated in the attitude of blessing. Upon his head, which is unmitred, there appears the tonsure, and the hair which remains is blue. Over the figure are the words "WILLELMUS EPISCOPUS." Above is a half-length figure of our Lord, on a blue background, with green hair, in his peculiar nimbus, his right hand elevated, and holding a clasped book in his left. Beneath the bishop is a kneeling figure, having the tonsure, clothed in a blue gown, and raising both hands in supplication, with the words "ROBERTUS BENJAMIN" over the head. The whole letter measures 7¼ inches in height, 3⅛ of which are occupied by the figure of the bishop. In its ornamental parts, above and below and on its sides, are scattered ten hexameter and pentameter verses, addressed to the bishop as then alive, and praying for a blessing upon him.

transepts, with a semicircular apse at its eastern termination. The foundation of the whole fabric was in all probability laid at once, as a first step; and in all the subsequent stages of the structure, as they were begun and completed from time to time according to circumstances, this original plan was carefully adhered to. The general form was symmetrical, but in its subdivisions there are numerous departures from uniformity. For instance, as I shall presently have occasion again to remark, internally no two of the pier-arches are of an equal span, and externally the buttresses and openings are not equi-distant. To the cursory observer these irregularities may perhaps appear to be in themselves the result of carelessness or caprice, but this is not the case. They are all of them inherent conditions of the original scheme, and in almost every instance they arise from a compliance with those conditions. Our Norman architects were not unfrequently very careless in laying down their plans. Eccentricities of this nature are found in others of their churches; but nowhere, perhaps, are they so striking as here at Durham.

The building (my remarks are at present confined to the original limits of the cross) was proceeded in, as the work itself indicates, at different times through a space of forty or fifty years; or, perhaps, during even a somewhat longer period. In these successive stages of the work the lines of the plan as at first designed seem all along to have been adhered to; but here also there are certain irregularities in the heights of the stories, which appear to be deviations from the original scheme, and, though not made without reflection, they are not so readily accounted for as those seeming discrepancies in the plan before noticed. It is not a matter of surprise that such differences should exist, when it is remembered that here, as in most other extensive buildings, the progress of the work was occasionally stayed for want of funds or other causes, and after a suspension of some years was taken in hand by a company of masons who had borne no part in the work already built. In the present instance, as I have already remarked, the foundations of the whole church seem to have been laid, once for all, as the very first step in the work; so that every stage of its progress, as regards the lines of the plan, was thus restricted. But no such restriction prevented an alteration

of the heights, or of the composition of their parts and members; and therefore, being in this respect unfettered, every succession of workmen made such variations as were deemed necessary, or as were in accordance with the advanced state of the art—for the art was always progressive. They introduced new forms into the detail, and a new style of ornament; but took especial care to preserve a general resemblance between the earlier work and their own, and, what is more, were sparing or lavish in the use of enrichments in proportion to the means placed at their disposal.

After these general remarks, the bearing of which in mind may be attended with advantage in our inquiries, I proceed to be more particular.

In constructing a church, it was usual, for an obvious reason, to commence with the choir-end and proceed westwards. This plan was adopted in the present instance. The following short description of the various stages of the fabric, and their respective limits, will explain the progress of the building. The interval between some of them may have been that of a few years only. In the case of others the intervening period was of a longer duration.

The First Stage.—The choir, with its aisles. The aisles of the transept with their pier-arches (*all darkly tinted on the plan*) and the triforium above; and, probably, the whole of the foundation of the cross or general ground plan.

I may here remark that Bishop de Carilepho, who laid the foundation of the church in 1093 or 1094, soon afterwards died, and that his successor Flambard, for a while, at least, strenuously co-operated with the monks in carrying on the work. As Flambard has been mentioned, I would particularly direct the attention of the members of the Institute to a remarkable bridge, which may be found spanning the Wear at the foot of the hill on which we are assembled, and which is known to have been built by that prelate. It is called Framwellgate Bridge, and with the exception of the parapets, which are of modern date, is much in the same state in which it was left by the bishop. This is probably the oldest bridge of English construction in the kingdom. The other bridge, which crosses the river in the direction of Elvet, is not without its interest. It (I mean the half of it which is old) was constructed by Bishop

Pudsey, who died in 1193, and was called the New Bridge for many centuries. Its arches are ribbed and pointed, and are in good preservation.

THE SECOND STAGE.—The walls of the transept were continued along the north and south ends and the west side —two compartments of the aisles of the nave (*all less darkly tinted on the plan*), the pier arches of those compartments and one arch of the triforium of the nave on each side—the clerestory and the groining of the north wing of the transept.*

THE THIRD STAGE.—The clerestory of the south wing of the transept, and the arches of the central tower.

THE FOURTH STAGE.—The nave completed, including the western towers to the height of the eaves course of the clerestory—the south wing of the transept groined. *The Norman cross was now completed.*

THE FIFTH STAGE.†—The chapel of the Galilee (not included in the ground-plan); the gable at the west end of the nave; the enrichments to the two cloister doors in the nave, and also to the great north door.

End of Norman Work.

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* The following extract, from the "Continuator" of Symeon's "*History of the Church of Durham*" (Ed. Bedford, p. 257,) has a distinct bearing upon the early stages of its construction:—"Circa opus ecclesiæ modo intentius modo remissius agebatur; sicut illi [sc. Rannulfo Flambard, 1099–1129] ex oblatione altaris vel cimiterii vel suppetebat pecunia vel deficiebat. His namque sumptibus navem ecclesiæ circumductis parietibus ad sui usque testudinem erexerat. Porro predecessor illius [Willelmus de Carilepho, 1081–1095] qui opus inchoaverat, id decernendo statuerat, ut Episcopus ex suo ecclesiam, Monachi vero suas ex ecclesiæ collectis facerent officinas. Quod illo cadente cecidit. Monachi enim omissis officinarum edificacionibus operi ecclesiæ insistunt quam usque navem Rannulfus jam factam invenit." The truth of these historical statements is amply proved by the most satisfactory indications.

† The following Papal mandate has an especial reference to the works in progress in the cathedral during this the last stage of its Norman architecture:—

"Alexander Episcopus servus servorum Dei dilectis filiis omnibus sacerdotibus et personis de Haliwerefolk salutem et apostolicam benedictionem. Pietatis operibus summo studio nos oportet intendere, et quoslibet Christi fideles assiduis exhortacionibus invitare. Quoniam vero, sicut relatum est nobis, hæc pia consuetudo ab antiquo instituta dinoscitur et usque ad hæc tempora observata, ut de singulis scilicet parrochiis vestris, pro quaque domo, ad operaciones ecclesiæ beati Cuthberti unus denarius annuatim consueverit exhiberi, universitati vestræ per apostolica scripta mandamus quatenus parrochianos vestros monere et diligencius inducere studeatis, et eis auctoritate nostra in peccatorum suorum veniam injungatis, ut singulis annis juxta antiquam consuetudinem ministerialibus predictæ ecclesiæ stabilitas helemosinas largiatur. Cum autem ministeriales illi ad vos statuto tempore venerint, eis ad collectam ipsam commodius faciendam consilium curetis et auxilium exhibere, ita quod vestra devocio debeat exinde non immerito commendari. Dat. Senon. vi. Id. Aug." The endorsement, which is still more explicit, speaks of these pennies as smoke pennies:—"Mandatum Alexandri Papæ tercii omnibus parochianis in Haliwerfolk quod denarios fumales ad fabricam Ecclesiæ Dunelmensis annuatim persolvant." The date of the mandate is 1174.

THE SIXTH STAGE.—The upper portions of the western towers above the level of the Norman eaves course.

THE SEVENTH STAGE.—The semicircular end of the choir removed, and the chapel of the nine altars or eastern transept commenced. The central tower raised.

End of Early English Work.

THE EIGHTH STAGE.—Some of the higher parts of the nine altars' chapel with its groining completed; the Norman groining over the choir removed and the present vaulting constructed, which is a continuation of that over the eastern transept or nine altars. At this time several windows were enlarged and tracery inserted.

These windows were chiefly the work of John Forcer, who was Prior of Durham from 1341 to 1374. During his time was fought the memorable battle of Neville's Cross, and we have from him a remarkable letter addressed to the bishop, who was at that time absent, giving a minute account of the conflict. The prior died at the great age of ninety years, and was buried not in a coffin but in the hide of an ox, for which there is a charge of 5*s.* in the bursar's roll of the year. The sempstress who stitched up the body of the deceased in the hide received 2*s.* 6*d.* for her pains. In flagging the church, in 1729, portions of the hide were found in the earth in levelling the floor.

End of Decorated Work.

THE NINTH STAGE.—The early English central tower removed and the present lantern commenced. The whole of the present central tower above the Norman eaves course is of what is called the perpendicular date. More windows altered. No material alteration after this period.

To the earlier part of the perpendicular period must be assigned the altar screen, to which a large contribution was made by John Neville, Lord of Raby, the remainder of the cost having been defrayed by the convent and its cells. During a considerable portion of the time occupied by the ninth or perpendicular stage of the cathedral there lived, as

Prior of Durham, John Wessington, who must have been a very remarkable man. To speak of his works as an author, or of his compilations respecting the history and the rights of the Church over which he presided for upwards of thirty years, does not come within my province; but with respect to the fabric itself of his monastery—the subject now before us—a bare enumeration of his works would occupy many of my pages. To him must be assigned the perpendicular tracery which has from time to time in modern years been removed from the windows of the church, and the splendid paintings in glass with which those windows were graced. He constructed the Te Deum window over the clock at the south end of the middle transept; and in short left behind him, in almost every part of his cathedral, the most signal proofs of his taste and liberality. When it is stated that upon the church and its conventual buildings he expended the large sum of £2354 2*s.* 9*d.* in the money of his time, we shall be able to form some notion of his munificence. To some of his works in particular I shall call your attention in the course of the day.

With respect to the central tower, the upper part of which has been assigned to the perpendicular period, we have an interesting piece of information relative to an accident which rendered some material repairs necessary, and led probably to the total change of its original character in an architectural point of view. Whilst the monks were at matins on the feast of Corpus Christi, 1429, the "poll" or wooden spire, which then surmounted the tower, was struck by lightning, and a considerable portion of the fabric was utterly destroyed. The repairs cost £233 6*s.* 8*d.*, a large sum in the money of our present time. In 1456 the tower again wanted repairs, and works were undertaken in that year which were not finished in 1474. The casing of Roman cement was imposed upon the upper stage now about fifty years ago. Happily the process was found to be expensive. For this portion the estimate had been £3000; the cost, however, was not far short of £10,000, and so the rest of the tower escaped, not, however, without having been much cut away to reduce the honey-combed masonry to a plain surface.

End of the Perpendicular Style.

After an endeavour to arrange the various parts of the cathedral in their respective stages, permit me to make a few general remarks with respect to the CHOIR, the MIDDLE TRANSEPT, and the NAVE in particular, and to conclude with some general observations upon the EXTERIOR, the NINE ALTARS, the GALILEE, the CHAPTER HOUSE, the DORMITORY, and some of the monastic buildings.

And first of the CHOIR.—The cathedral, as commenced by Bishop Carileph, was a plain edifice. A spectator in the choir, confining his view to the Norman work, sees no enrichment whatever, with the exception of the channelling upon the cylindrical piers. The whole of the masonry, although plain, is well executed for so early an example of that style. The piers of the choir, and throughout the whole fabric, are in the same range alternately cylindrical and shafted, but the opposite piers correspond with each other—a common arrangement in churches of this style. The triforium or middle story is without enrichments, and the upper or clerestory has not so much as a single moulding about its windows. The gangway or passage in the wall, such as may be seen in the nave, is here omitted, and from this omission we may conclude that the work was at first begun upon an economical plan. The vault of this choir, however, when first constructed, was groined, and resembled most probably that now existing over the north wing of the middle transept.

THE TRANSEPT.—The ends of this transept have been much altered. The pier-arches, aisles, and triforium resemble those in the choir; but there is a difference in the clerestory of the north wing. It has a gangway in the thickness of the wall, with a columnar screen and arches before it, and the vaulting was built at the same time. The clerestory of the south wing differs again from that in the north. It also has a gangway and an arched screen, but of a plainer character. Both were finished probably for a flat ceiling. The present groining of the south transept was not built along with it, but is of a later workmanship, somewhat earlier, however, than that of the nave.* The screen had at first more openings than are now visible,

* There are indications to lead to the conclusion that both were constructed to bear a flat wooden roof.

several being filled up and concealed by the groining. The appearance of the workmanship in the clerestory of the south wing, internally, might lead to the supposition that it was not designed to remain permanently. It was probably hastily or economically finished.

The Nave.—The two most easterly compartments of the nave were built with the middle transept, the outer walls being carried a little further to the west. Along with these two compartments of the aisles one arch of the triforium on both sides was constructed, and when the building had advanced thus far the work seems to have been suspended for a considerable length of time. An observer, in comparing the remaining portions of the building with those already noticed, cannot fail to detect in almost every feature of the architecture marked differences of character, although the general forms of the earlier work are retained; and it is clear that when the work was resumed the church was in possession of ample means for the purpose, for, instead of plainness, this our nave exhibits an example of a Norman interior surpassing, perhaps, in the abundance of its decorations, any other church in England of that period. The arch-mouldings of the lower and middle and upper stories are enriched with the chevron, and in other respects also they differ from those in the choir and transepts. The capitals of the piers are of less depth; the triforium is raised, the vault-shafts (those which carry the groins) are of greater projection, and instead of rising from the tablet over the pier-arches, as before, rise from the pavement; the tablets, or string courses, are enriched; the transverse arches of the groined vaulting are pointed, and the ribs of the groins, both in the middle and in the aisles, are much ornamented. The whole of the nave from the points before described, with the exception of the vaulting of its middle aisle, seems to have been carried on without interruption. It had four entrances: two into the cloister, one at the west end, and one in the north side towards the city. The enrichments upon the western doorway, as seen in the Galilee, are coeval with the nave itself. All the other entrances were enriched at a later period, although the openings existed as doorways from the first. It is worthy of remark, that there was found a few years ago, in the bed of the river at the west end of the church, a finished stone con-

taining the representation of an eagle or other large bird, and in all respects resembling those used in ornamenting the inside of the great northern doorway of the nave. Some mischievous schoolboy (for from the first period of the cathedral there was a grammar school in the churchyard) had probably thrown it down into the river from the workshop on the summit of the hill. The stone is preserved in the library. The panelling against the walls in the aisles of the nave beneath the windows is of excellent character, and runs throughout the Norman work with but few variations.

Perhaps there is no Norman cathedral in England possessing higher claims to admiration than that of Durham. Its pier-arches and triforium are of greater proportionate height than those of any other church of its date, if the naves of Gloucester and Tewksbury are excepted; but the nave of Durham, from its completeness, is a much more valuable specimen of Norman architecture than either of those two. From the loftiness of its proportions arises that grandeur of effect which pervades the whole interior of the edifice. It is the only Norman nave in England which is groined throughout, and the vaulting over the centre may be pointed to as of wider span than any groins of the same date in the kingdom.

The Exterior.—The exterior has undergone too much alteration to enable the student in architecture to trace so satisfactorily the gradual progress of the workmanship; but on a careful examination of the nave, he will find indications of its external features having been enriched in a manner corresponding with those within, whilst the choir, in like manner, has been comparatively plain. The differences in the composition between the outer aisle walls of the choir and those of the nave need not to be pointed out. It may, however, be remarked that the outer wall of the nave formerly terminated on both sides of the fabric in a series of gables, each of the windows in the triforium having had over its head a gable-roof. Slight indications of these may still be seen on the north side. Those on the south, which were more manifest, were totally obliterated along with some other very interesting features of ancient arrangement in the late re-edification of the external surface of the wall.

THE WEST FRONT is a fine composition, and as it is composed of several different styles, it is a good subject for architectural study; but its ornaments unhappily shared the same fate as those of the other parts of the exterior (the south side excepted) in the end of the last and the beginning of the present century, when it had become necessary that steps should be taken for the security of the fabric. That the whole of the exterior had fallen into decay from the soft nature of the stone is certain; but the object would probably have been better attained by substituting a sound stone, in every respect representing the original character of that upon which time had operated, than by wantonly cutting away the whole of the weather-beaten honey-combed surface to the depth of several inches, ornament and all, till a sound face could be arrived at in the existing wall. Of the extent to which this mischief was carried I shall presently have an opportunity of giving you ocular demonstration, as a late removal of earth at the northern base of one of the western towers, leaves no room for conjecture upon the subject.

THE GALILEE must next be noticed. This elegant structure owes its erection to Bishop Hugh Pudsey, who sat in the chair of St. Cuthbert from 1154 to 1194, and, as has been already stated, is the last part of the cathedral to which the term Norman can be applied. In this chapel there are very many things worthy of attention, especially the tomb of the Venerable Bede and the Norman fresco on the walls, the examination of which may fitly be deferred until we shall be upon the spot with the fabric itself before us.

THE NINE ALTARS may now be mentioned. Upon the site occupied by the nine altars Bishop Pudsey began to construct his Lady Chapel; but, circumstances preventing him from carrying his design into execution in that locality, he transferred his contemplated structure to the west end of the nave, and hence we have the Galilee above mentioned. The present eastern transept was first contemplated in the year 1235, when Richard Pauper or the Poor was bishop, and Thomas Melsonby was prior. To the former some of the finest parts of the cathedral of Salisbury owe their erection, and to the latter, whilst Prior of Coldingham, a cell in Scotland under the cathedral of Durham, we may assign

those most beautiful portions of the conventual church there which now remain. An indulgence granted for the collection of alms towards the erection of the nine altars in the above year states that the apse at the eastern termination of the church was in a falling state. Other indulgences were from time to time obtained for the same purpose.* The building was begun in earnest in the year 1242; and twelve years afterwards the convent entered into an agreement with Robert Lord Neville, of Raby and Brancepath, for timber to be employed in the work. The original contract, which is preserved in the treasury, is so curious as to justify my calling your attention to a few of its leading particulars. The timber was growing on the northern side of the Wear, on the tract of ground extending westwards from Sunderland Bridge, near Croxdale, to Willington, near Brancepath. Six acres at least were to be cleared yearly, and the contract was to continue in force for thirty years. The price agreed upon was 630 marks, or £420, a sum amounting to not much less, perhaps, than £5000 of our present money. Young growing timber was reserved, and was to be protected by the purchaser, and when a tree was felled he was to surround the stump or stool with a fence to ward off the cattle from the shoots which it would in due time send forth. The purchaser was to enjoy the herbage and pannage of the whole tract of ground, cleared or uncleared, saving a right to the seller for the feeding of his own oxen and swine, together with full freedom of chase, and the perfect protection by the purchaser of such hawks and other birds as should build their nests in the trees. There are other interesting conditions, but the above may suffice. From indulgences for the collection of money, and from other sources of information, it appears that this eastern transept was not finished till nearly the end of the century. Other particulars respecting it will attract our attention on the spot.

* The various indulgences granted to all who should contribute to the erection of the contemplated fabric may be found in the Appendix to the Account of the Antient State of the Cathedral already referred to above. I may add, that in removing the apse such parts of its masonry as were beneath the level required for the new structure were suffered to remain unmoved. In making a grave in 1844, it was necessary to remove portions of the outer curve in the middle of the floor of the nine altars. The termination or sweep of the inner curve is beneath the floor of the shrine.

Prior Melsonby has been mentioned above as one of the two dignitaries to whom the eastern transept or nine altars owes its origin. In his history there are many circumstances of great interest, one of which may be mentioned, as it tends to prove that popular tales have generally some foundation to rest upon, and is, moreover, connected with the history of the cathedral. Melsonby, a man of great learning, and taste, and munificence, was elected Bishop of Durham by his convent in 1237, upon the death of Bishop Stichel, but Henry III. took several exceptions to the choice. Of these exceptions some were trifling enough; others, such as that he was liable to attacks of the gout, &c., are amusing. One, however, was of a grave character—that he was a homicide, in that he had once tempted a rope-dancer to perform his feats upon a cord suspended between two pinnacles of the church over which he presided, and that the man so tempted had lost his life during the performance. We have here, without any doubt whatever, the origin of the daily-repeated tale that a man in times of old was twice on the same day induced to leap from the nave-wall of the cathedral for a purse of money, and that having in the first instance escaped unhurt, he lost his life in the second trial. The figure which is daily pointed out in the churchyard as representing the man with the purse in his hand, is probably the effigy of a Lady Lumley holding in her hand a glove.

The Chapter House, when in its orignal state in 1799, was, with respect to its character and period, without a rival in the kingdom. It was built by Bishop Galfrid Rufus, who presided over the see from 1133 to 1140; and in proof of its period, there is on one of the capitals of its doorway, represented in stone, the centaur or badge of Stephen, the contemporary king. The large drawing which I represent—the original drawing of John Carter, who strove in vain in the above year to rescue this magnificent room from destruction—affords a perfect idea of its stately character and appearance at that time. What it is now we shall see presently. Originally, in its perfect state, the chapter house measured internally about eighty feet in length by thirty-seven in breadth. It was lighted by numerous windows, most, if not all of them, restorations or rather insertions of a later character and date, and a

large doorway richly ornamented within opened into it from the cloister. A range of Norman panelled-work, with intersecting arches between rich horizontal strings, decorated the north, east, and south internal walls of the fabric, beneath which, as you will observe from the drawing, there ran a triple tier of stone benches, giving it in some measure the character of an amphitheatre. The stone chair in the centre of the apse was of coeval workmanship, and in that venerable seat had been installed not fewer than forty-five bishops of Durham; Bishop Barrington, the most munificent and memorable of the series, was the last. The floor within was rich with inscribed slabs and brasses, commemorating the prelates whose remains rested below. Such was the chapter house in 1799, unique in its architecture, venerable from its age, and associated with the history of the see of Durham more intimately, perhaps, than any other part of the church; but before the end of that year its glory had departed. It had been determined to curtail the room of its fair proportions, to demolish the apse, and to convert what remained into a plain paralellogram of scarcely half the size of the orignal, to decorate it with a coved ceiling, and to render its walls more sightly by means of a coat of plaster; and fearfully were these sage resolutions carried into effect. A man was suspended over the roof by means of machinery to knock out the keystones of the rich groining, the whole of which was permitted to fall upon the gravestones of not fewer than fourteen bishops, and break them in pieces. Not one inscription had been transcribed. The next step was to demolish the apse and build a transverse wall for sash-window openings; and then came the reckless cutting away of such rich Norman decorations as were likely to interfere with a side stoothing of lath and plaster, and the laying down of a common deal floor several feet above the former level of the room. In this state the chapter house remained till the year 1830, when portions of the stoothing were removed, and the richly-ornamented doorway and portions of the interesting panelling on the north side of the room were again laid bare. More has since been done, and restorations in plaster of the more prominent mouldings and ornaments cut away by the chisel of the destroyer have been made. But why, in these days of taste and liberality, should not the whole

of the chapter house be restored? Carter's two drawings which I exhibit to-day, and which I am proud to possess, are of themselves able to give every necessary information to any architect who may be employed in the task.

The Cloister.—The original cloister had what is called a hipped roof, of which traces may be seen in the north and east alleys. The present cloister was commenced in the year 1368; but the work seems to have made but little progress until the times of Bishops Skirlaw (1388-1406) and Langley (1406-1437). The total cost of the work was £838. Ten rolls of the annual expenses of the cloister, extending from 1408 to 1419, have been preserved, and they afford much valuable information relative to the building proceedings of their period, of which I have elsewhere given a copious abstract. The tracery in the windows of the cloister sufficiently proves its period; it was, in fact, inserted in the latter end of the last century.

The Lavatory, in the centre of the cloister quadrangle, of which the basin only now remains, was erected in the years 1432 and 1433. The stone was brought from the bed of the Tees near Eggleston Abbey, and the whole cost of the work was £23 7*s.* 3*d.* Here, again, we have a minute account of expenses.

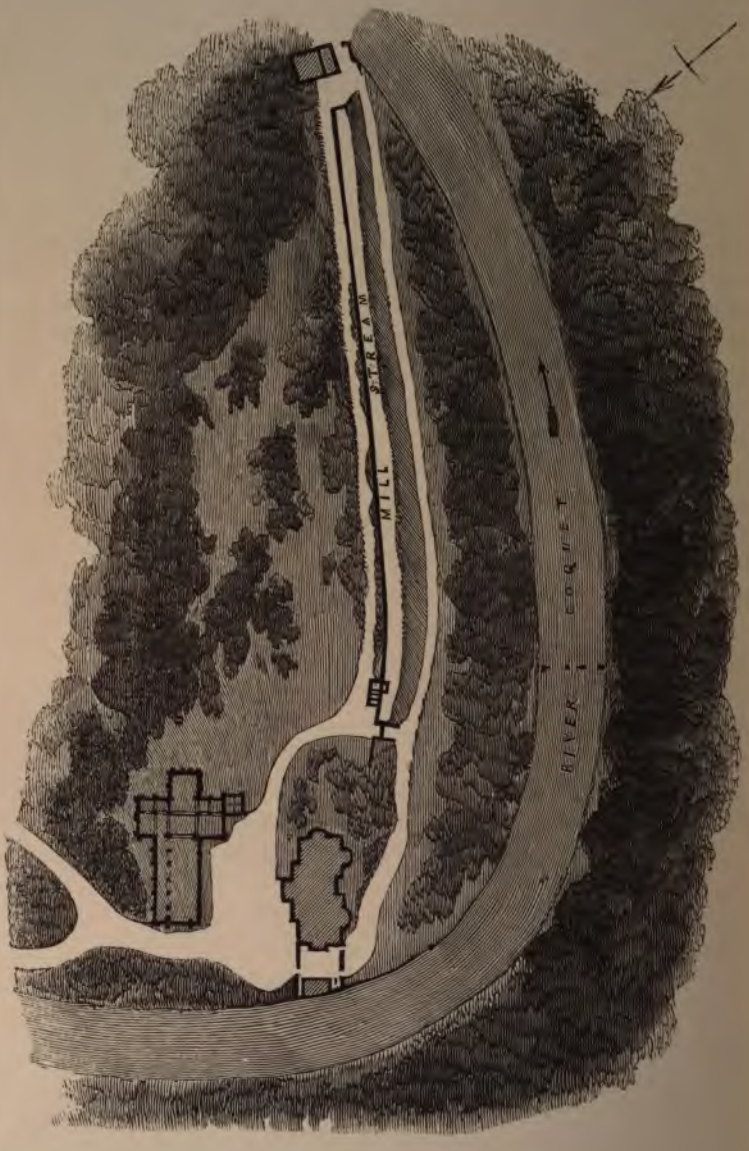
The Dormitory, also, requires a few remarks. The original structure, of which nothing is now known except that it had a high-pitched roof, fell into decay towards the latter end of the fourteenth century. A contract for its re-edification was entered into in 1398, which seems not to have been acted upon, as I find that a new contract was made for the same purpose in 1401.* These two contracts having been lately published by the Surtees Society, have been of great service to those who take an interest in architectural inquiries. Soon after the Dissolution, a considerable portion of the then no longer-needed dormitory (its southern end) was converted into a dwelling-house for the prebendary in possession of the fifth stall; that stall, however, having lately fallen into the hands of the Church Commissioners, the house has been removed, and the whole of the fabric is now undergoing a complete restoration, in

* The account rolls for the other portions of the dormitory, viz., the roof, floor, lead, glass, &c., have lately been found in the treasury (1855).

order that so magnificent a room (195 feet by 40) may be devoted to some useful purpose.

The PRIOR'S KITCHEN now attached to the Deanery will not fail to attract your careful attention, remaining as it does in much the same state as it was left in by its builder, and affording a most valuable specimen in an architectural point of view of a groined roof of its period for a domestic purpose. The work was commenced in the year 1368, and was a year and a half in hand. The roll of costs is preserved, measuring upwards of five feet in length, with an endorsement of half that measurement besides. This is the earliest fabric roll to be found among the muniments of the Dean and Chapter. The work cost £180 17*s.* 7*d.*, and with these particulars in your memory you will look upon the building with interest.

In conclusion, permit me to express my sincere thanks for the attention which you have been pleased to pay to my opinions and statements, and at the same time to profess my readiness to afford upon the spot any further information in my power on this most interesting subject. I would further beg leave to state that, after we shall have made an inspection of the Cathedral and its monastic buildings, I shall have much pleasure in calling your attention in the Chapter House to divers relics of antiquity of considerable interest, such as the most perfect of our Roman altars, the precious robes, &c., &c., found in the coffin of St. Cuthbert in 1827, the antient copes worn in the Cathedral before the Reformation and down to almost our own times, together with many of our choicest manuscripts and other things, which may not be unworthy of your notice.



PLAN OF BRINKBURN PRIORY.

BRINKBURN PRIORY.

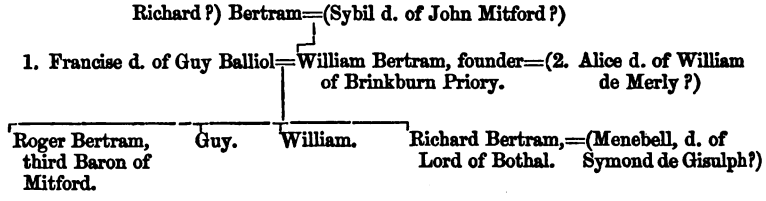
By THE REV. JOHN LOUIS PETIT.

The Priory of Brinkburn was founded by William Bertram, second Baron of Mitford, in the reign of Henry I.* Two members of this ancient family were settled in Northumberland at a very early period, at Mitford and at Bothal, both on the Wansbeck, the former a little above Morpeth, the latter a little below it. Mitford was held under a grant from William the Conquerer by the service of five knights. Bothal was held as three knights' fees by Richard Bertram in the reign of Henry I. This Richard was probably a son of the founder of Brinkburn, who mentions in the foundation about his wife Francisca, and his heirs Roger, Guy, William, Richard, and others. Wallis, in his "History of Westmoreland," states, on the authority of an ancient manuscript, that the father of William Bertram, who is there called Richard, married Sybil, daughter and heiress of John Mitford, the last Saxon proprietor. On the same authority he calls the wife of William Bertram, Alice, and not Hawisa, as in the charter above quoted, and makes her the daughter of William de Merley. It is possible that William Bertram may have married Alice Merley as his second wife, but Harrisa appears by another charter to have been the daughter of Guy Balliol. In this charter, granted by Roger Bertram, third Baron of Mitford, to the monks of St. Mary at York, he confirms the grants of his father William, and his grandfather Guy Balliol. Mr. Hodgson, in his "History of Northumberland," inadvertently makes Guy Balliol the paternal, instead of the maternal grandfather of Roger, and the father of William Bertram. In the pedigree of Balliol, in Ord's "History of Cleveland,"

* The buildings seem to have been erected by Osbert Colutarius, or Solintarius, on land granted by Bertram. The foundation is commonly attributed by Leland to a member of the families of Felton or Lisle.

Harrisa, daughter of Guy Balliol, is correctly described as the wife of William Bertram. The Bertrams of Bothal, like those of Mitford, are said to have received their property from marriage with a Saxon heiress. Reginald Gisulph is said to have held Bothal at the time of the Conquest, and to have had a son Symond, whose daughter and heiress, Menebell, married Robert de Bertram.* Robert is probably written by mistake for Richard; but he is described as the son, not the brother of Roger, the third Baron of Mitford. The story of the Saxon marriage seems a pure fabrication.

The following Table explains the early descent of the family; the later pedigree is correctly given by Hodgson, under Mitford and Bothal:—


Richard ?) Bertram=(Sybil d. of John Mitford ?)
1. Francise d. of Guy Balliol=William Bertram, founder of Brinkburn Priory.=(2. Alice d. of William de Merly ?)
Roger Bertram, third Baron of Mitford.
Guy.
William.
Richard Bertram, Lord of Bothal.=(Menebell, d. of Symond de Gisulph?)

The monks of Brinkburn had a grant of a salt-pan at Warkworth from Henry, Earl of Northumberland, the son of David, King of Scotland; and William, son of the above Henry, who describes himself in his charter as William de Gwaren, Earl of Northumberland, and was afterwards known as William, the Lion King of Scotland, confirmed as well his father's gift as the grants of Roger Bertram. The latter were also confirmed by Henry III. An abstract of the rental of the monastery shortly after its dissolution is given from the Minister's accounts in the last edition of the "Monasticon." The Brinkburn chartulary was formerly in the library of Lord William Howard, and was recently in the Library at Stowe, from whence it passed, with the other MSS. in that collection, into the possession of Lord Ashburnham. An abstract of it is printed in the "Archæologia Æliana."†

* "Antiquities of the Ogle Family," compiled A.D. 1664, by Robert Fenwick, of Teddington, cited by Hodgson, Hist. Northumb., Part II., Vol. II., p. 122.

† I am much indebted to the kindness of John Hodgson Hinde, Esq., for these particulars of the early history of Brinkburn.

ARCHITECTURAL HISTORY.

Even if the banks of the Coquet were entirely divested of the wood which so luxuriantly covers them, the nature of the ground is such, that the picturesque ruins of Brinkburn Priory might easily escape the observation of the traveller. The site of the Monastery must have been chosen with a view to perfect seclusion. A small area, between a steep wooded bank and the river, which here forms a sharp bend, seems little more than sufficient for the buildings erected on it. The opposite bank is rocky and precipitous, and also covered with wood; the approach is partly cut through a rock, and affords no view of the building till we come within a few yards of the northern porch of the church. But it will be noticed that the spot is so selected that the tendency of the stream, always rapid, and often swollen to a torrent by floods, is to encroach on the opposite bank, and leave a continually increasing deposit on the side occupied by the Monastery, so that it has probably suffered but little from such casualties.

The church, with the exception of its roofs, and its south-western angle, is nearly perfect. The site of the monastic buildings, between the church and the river, is occupied by the residence of Cadogan H. Cadogan, Esq.,* a modern structure, but harmonising well with the ancient remains. It still contains some of the old walls. Little more than one hundred yards eastward of the church is a mill, in which old portions are to be found; and the mill-stream is carried in nearly a straight line along the boundary wall of the garden, at a very short distance from the river. The annexed plan, though it does not pretend to be accurate, may give some idea of the locality. I wish I could by any sketch convey an impression of the extreme beauty of the scene. Turner's view, in his "England and Wales," though it might be difficult to find out the point from which it was taken, is, as regards character, a most faithful representation.

* I cannot but take this opportunity of acknowledging the kindness and hospitality of the late Major Cadogan, from whom, as from the present proprietor, I obtained every facility in examining this interesting relic.

The form of the church is that of a cross; consisting of a nave with a north aisle; north and south transepts, each having an eastern aisle; a chancel; and a low square tower at the intersection of the cross. Attached to the south-eastern angle of the south transept is a square vaulted building, apparently of later date than the church; and an arcade of trefoil arches on shafts indicates the addition of cloisters on the south side of the nave.

This arcade, as well as the form of the windows, proves that no south aisle was ever intended; in this respect the church resembles that of Lanercost Abbey in Cumberland, a building of nearly the same date and character; also the church of Bolton in Yorkshire, much of which may be assigned to the same period. And the priory church of Boxgrove in Sussex has the remains of a south aisle, a northern one never having been contemplated, as we see from the position of the cloister.

BRACKET ON N. SIDE OF NAVE PIER, NEAREST TOWER.

Although the round arch is freely used, I doubt whether any part of the present edifice can be referred to the period during which the Norman style prevailed. Arches of this form are not uncommon in very pure early English buildings in the north, and some other features which seem to betoken an early date, as the square abacus, and a certain squareness of outline in the sections of the mouldings, are, in foreign examples, continued through the fourteenth century. It is indeed probable that there are in England many examples of a style more fully developed than that of Brinkburn, which are nevertheless of an earlier date. The west front, which has no entrance door, exhibits part of a

Brinkburne

triplet of equal lancet windows, between which are blank arches, narrower and more sharply pointed. Separating this from the front of the north aisle, is a square turret with a pyramidal cap. The south angle is in ruins, but has a projection which seems to have contained a staircase, probably leading to a ledge or gallery under the windows. Below the string on which the western triplet rests (externally), is an arcade of pointed arches. All this is in good early English, and worked with very effective mouldings. The south side of the nave has lofty round-headed windows, of a proportion more usually found when the head is pointed, and belonging, in almost all cases, to a late period of transition. The Norman window is seldom much more than two squares in height.

LOWER ARCADE OF WEST FRONT.

On this side are two doors; that nearest the west end is a fragment, but probably was round-headed, like the other which is near the transept. This latter is probably the earlier of the two, having rather more of the Norman character. (See Woodcut, p. 257.)

N.W. PIER OF TOWER.

The doorway on the north side of the nave is a very beautiful specimen of the transition. It is, like the other,

round-headed, and has the Norman ornaments of the fillet, the chevron, and the beak head, as well as the early English quatrefoil flower. The compartment in which this door is set projects slightly, like a porch. The upper part is a gable, in which are three pointed trefoil arches on shafts, their capital having the square abacus.

The north aisle is divided from the nave by six pointed arches on short octagonal piers. The arches have two chamfered orders and a label, all worked plain, as are the capitals. The abacus is octagonal.

The triforium range consists of five couplets of round arches; each couplet corresponding to a pier of the arcade below. These have effective mouldings, in which the round torus predominates. It may be observed that the triforium in the transept, though having a general similarity to that of the nave, differs in some respects, and is probably earlier. The clerestory consists of six plain round-headed windows, corresponding in position with the pier arches.

TRIFORIUM IN NAVE.

The tower piers have more of a Norman than early English character; exhibiting rectangular edges, face shafts, and shafts in re-entering angles. As is often the case in conventual churches, those towards the central space are supported by brackets, at some distance from the ground, doubtless to admit of the extension of the choir westward of the intersection.

The tower arches are pointed, of two orders, of square section, but with a keeled torus at the edge. These arches somewhat resemble the French work that prevailed through the thirteenth century.

Brinkburne

There seems to have been no vaulting, except over the aisles. That of the transept aisles is tolerably perfect. There have evidently been some additions in height, to the outer wall of the north aisle, but not of a very late period.

An additional story has also been raised above the chancel, the date of which is not very clearly made out by its architecture. The two lower tiers of the chancel are well developed early English, having pointed arches, though rather obtuse, and shafts. The upper story has round windows, perfectly plain. The external buttresses are not continued through this story. The east end is a fine composition, having three tiers, each of which contains a triplet of windows; the front of the north transept has engaged in it a staircase turret, which adds much to the picturesqueness of the outline. In the chancel is a piscina, not very highly ornamented.

BRACKET, N.W. PIER OF TOWER.

I am disposed to look upon this church as one unaltered from its original design, unless it may be in the additional story of its chancel. The fuller development of the pointed style in some parts is no more than might easily be accounted for by the gradual progress towards completion.* The ground plan, it will be noticed, does not exhibit that length of choir eastward of the intersection which prevailed among churches of a somewhat advanced period of the thirteenth century, and was sometimes added to churches of a Norman, or even transitional character; I should therefore assign to the structure a period included in the ten last years of the twelfth century, and the first quarter of the thirteenth; and I cannot help

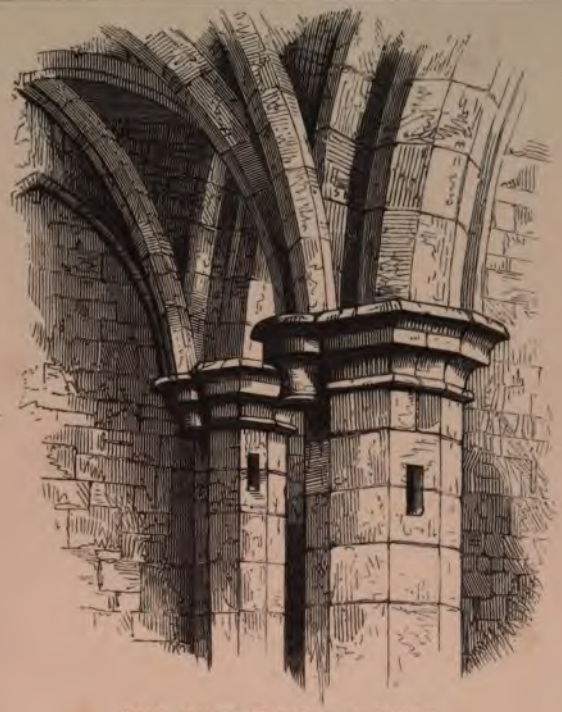
* The Rev. C. Hartshorne informs me the church was commenced as usual at the east end, and carried on round the south side, a juncture or change in the masonry being visible on the north side.

thinking that some influence may have been exercised by continental architecture; the application of the quatrefoil flowers to a chamfer, instead of a deep hollow (as usual in early English work), I have seen in French examples. But a careful examination of the details throughout this interesting building would well repay the trouble of the architectural student.

VIEW OF BRINKBURN PRIORY AND HOUSE, LOOKING SOUTH.

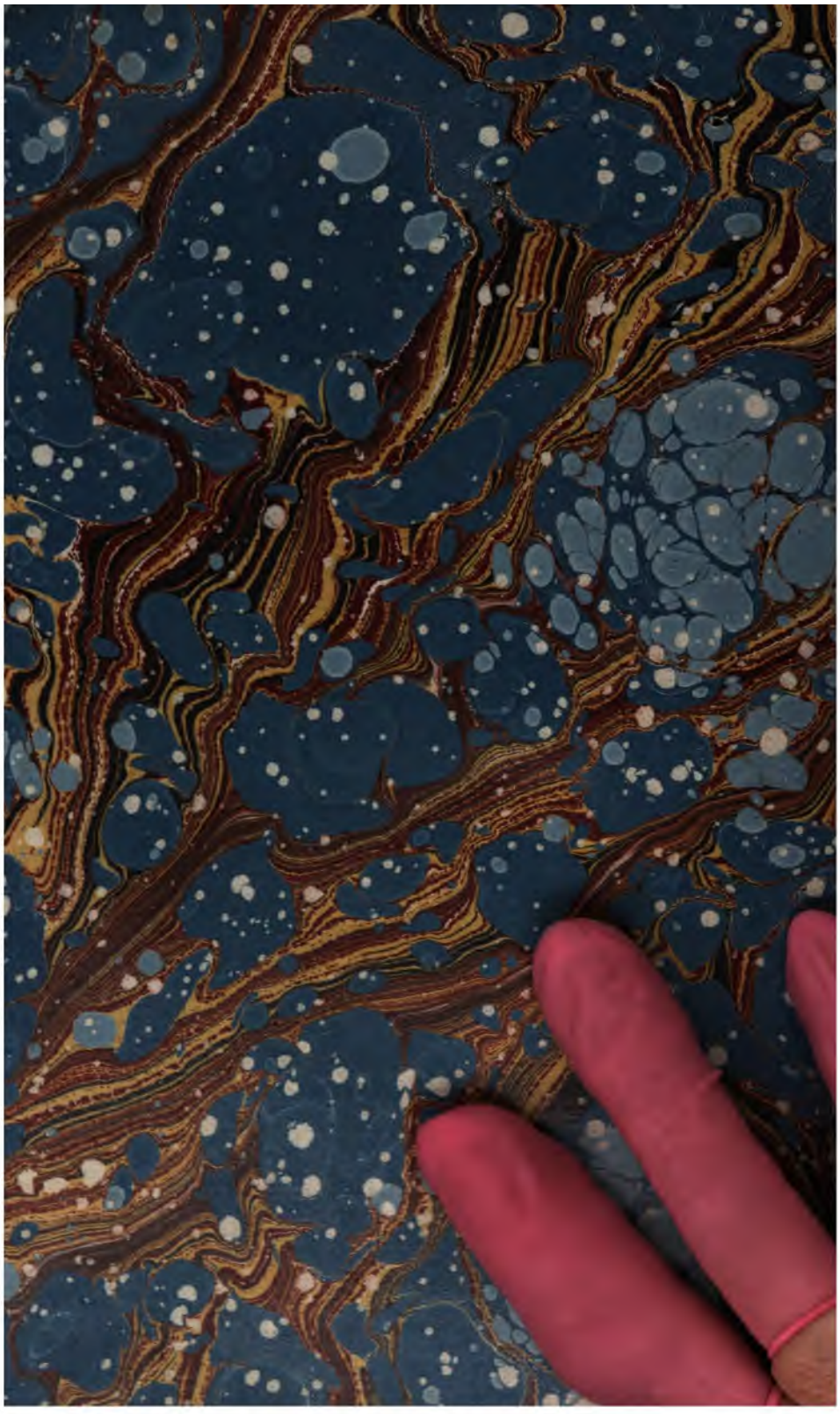
NORTH DOORWAY, BRINKBURN PRIORY.

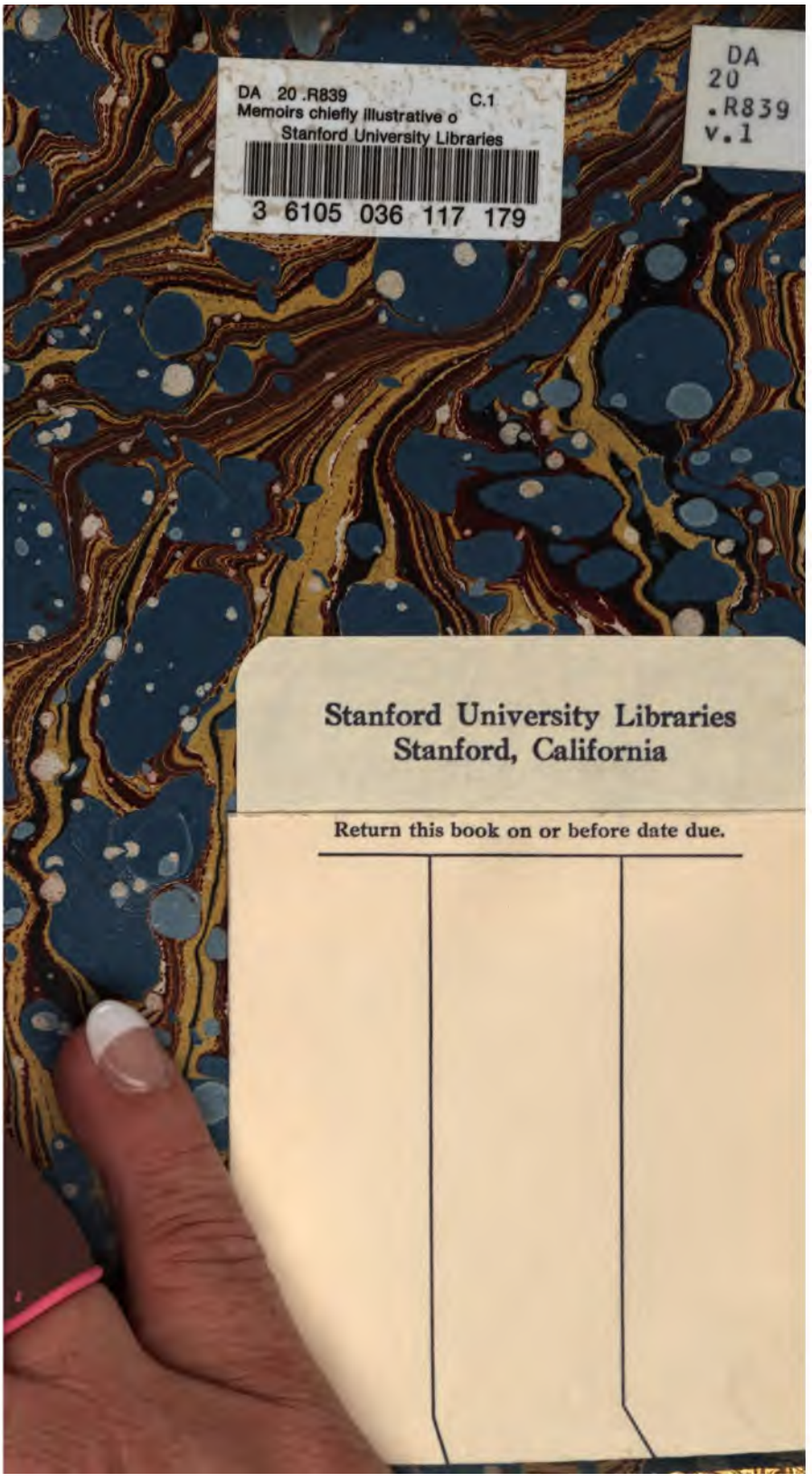
VIEW IN NAVE, LOOKING WEST.



EAST AISLES OF SOUTH TRANSEPT.

NORTH TRANSEPT, SHOWING STAIR TURRET, ETC.

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